OM-1589 163 473F
June 1999

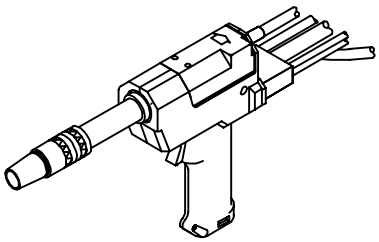
Processes

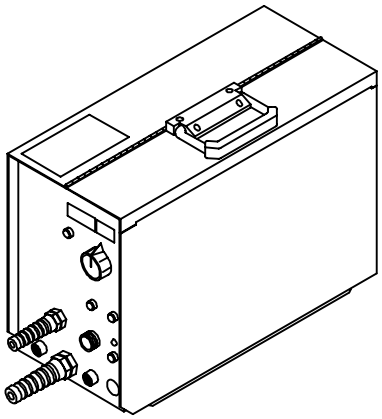
MIG (GMAW) Welding
Pulsed MIG (GMAW-P)

Description

Wire Feeder And Feeder Gun

XR™-M Wire Feeder
XR™-M Air- And Water-Cooled Guns





OWNER'S MANUAL

Visit our website at
www.MillerWelds.com

From Miller to You

Thank you and *congratulations* on choosing Miller. Now you can get the job done and get it done right. We know you don't have time to do it any other way.

That's why when Niels Miller first started building arc welders in 1929, he made sure his products offered long-lasting value and superior quality. Like you, his customers couldn't afford anything less. Miller products had to be more than the best they could be. They had to be the best you could buy.

Today, the people that build and sell Miller products continue the tradition. They're just as committed to providing equipment and service that meets the high standards of quality and value established in 1929.

This Owner's Manual is designed to help you get the most out of your Miller products. Please take time to read the Safety precautions. They will help you protect yourself against potential hazards on the worksite. We've made installation and operation quick and easy. With Miller you can count on years of reliable service with proper maintenance. And if for some reason the unit needs repair, there's a Troubleshooting section that will help you figure out what the problem is. The parts list will then help you to decide which exact part you may need to fix the problem. Warranty and service information for your particular model are also provided.

ISO 9001 REGISTERED QUALITY SYSTEM

Miller is the first welding equipment manufacturer in the U.S.A. to be registered to the ISO 9001 Quality System Standard.

Miller Electric manufactures a full line of welders and welding related equipment. For information on other quality Miller products, contact your local Miller distributor to receive the latest full line catalog or individual catalog sheets. To locate your nearest distributor call 1-800-4-A-Miller.

TRUE BLUE® WARRANTY

Working as hard as you do – every power source from Miller is backed by the most hassle-free warranty in the business.

Miller offers a Technical Manual which provides more detailed service and parts information for your unit. To obtain a Technical Manual, contact your local distributor. Your distributor can also supply you with Welding Process Manuals such as SMAW, GTAW, GMAW, and GMAW-P.

Miller® *The Power of Blue.*

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⚠ WARNING

This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code Section 25249.5 et seq.)

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OPTIONS AND ACCESSORIES

WARRANTY

Declaration of Conformity for European Community (CE) Products

Note ☞ *This information is provided for units with CE certification (see rating label on unit).*

Manufacturer's Name: Miller Electric Mfg. Co.

Manufacturer's Address: 1635 W. Spencer Street
Appleton, WI 54914 USA

Declares that the product: **XR™-M**

conforms to the following Directives and Standards:

Directives

Low Voltage Directive: 73/23/EEC

Electromagnetic Compatibility (EMC) Directive: 89/336/EEC

Machinery Directives: 89/392/EEC, 91/368/EEC, 93/C 133/04, 93/68/EEC

Standards

Arc Welding Equipment Part I: Welding Power Sources: IEC 974-1
(April 1995 − Draft Revision)

Arc Welding Equipment: Wirefeed Systems: IEC 974-4
(May 1995 − Draft Revision)

Degrees of Protection Provided By Enclosures (IP Code): IEC 529:1989

Insulation Coordination For Equipment With Low-Voltage Systems:
Part I: Principles, Requirements and Tests: IEC 664-1: 1992

Electromagnetic Compatibility, (EMC): EN 50199

Torches And Guns For Arc Welding, EN 50078

European Contact: Mr. Luigi Vacchini, Managing Director
MILLER Europe S.P.A.
Via Privata Iseo
20098 San Giuliano
Milanese, Italy

Telephone: 39(02)98290-1
Fax: 39(02)98281-552

SECTION 1 − SAFETY PRECAUTIONS - READ BEFORE USING

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1-1. Symbol Usage

Means Warning! Watch Out! There are possible hazards with this procedure! The possible hazards are shown in the adjoining symbols.

▲ **Marks a special safety message.**

☞ *Means "Note"; not safety related.*

This group of symbols means Warning! Watch Out! possible ELECTRIC SHOCK, MOVING PARTS, and HOT PARTS hazards. Consult symbols and related instructions below for necessary actions to avoid the hazards.

1-2. Arc Welding Hazards

▲ **The symbols shown below are used throughout this manual to call attention to and identify possible hazards. When you see the symbol, watch out, and follow the related instructions to avoid the hazard. The safety information given below is only a summary of the more complete safety information found in the Safety Standards listed in Section 1-4. Read and follow all Safety Standards.**

▲ **Only qualified persons should install, operate, maintain, and repair this unit.**

▲ **During operation, keep everybody, especially children, away.**

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Use AC output ONLY if required for the welding process.
- If AC output is required, use remote output control if present on unit.
- Disconnect input power or stop engine before installing or servicing this equipment. Lockout/tagout input power according to OSHA 29 CFR 1910.147 (see Safety Standards).
- Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- Always verify the supply ground − check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach proper grounding conductor first − double-check connections.
- Frequently inspect input power cord for damage or bare wiring − replace cord immediately if damaged − bare wiring can kill.
- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.
- Do not drape cables over your body.
- If earth grounding of the workpiece is required, ground it directly with a separate cable − do not use work clamp or work cable.
- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.
- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.
- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to workpiece or worktable as near the weld as practical.
- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode or work cable to any single weld output terminal.

SIGNIFICANT DC VOLTAGE exists after removal of input power on inverters.

- Turn Off inverter, disconnect input power, and discharge input capacitors according to instructions in Maintenance Section before touching any parts.

FUMES AND GASES can be hazardous.

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes. Do not breathe the fumes.
- If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
- If ventilation is poor, use an approved air-supplied respirator.
- Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Always have a trained watch-person nearby. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

ARC RAYS can burn eyes and skin.

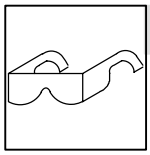
Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards).
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather and wool) and foot protection.

WELDING can cause fire or explosion.

Welding on closed containers, such as tanks, drums, or pipes, can cause them to blow up. Sparks can fly off from the welding arc. The flying sparks, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding.

- Protect yourself and others from flying sparks and hot metal.
- Do not weld where flying sparks can strike flammable material.
- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do not weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWS F4.1 (see Safety Standards).
- Connect work cable to the work as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock and fire hazards.
- Do not use welder to thaw frozen pipes.
- Remove stick electrode from holder or cut off welding wire at contact tip when not in use.
- Wear oil-free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes, and a cap.
- Remove any combustibles, such as a butane lighter or matches, from your person before doing any welding.



FLYING METAL can injure eyes.

- Welding, chipping, wire brushing, and grinding cause sparks and flying metal. As welds cool, they can throw off slag.
- Wear approved safety glasses with side shields even under your welding helmet.

BUILDUP OF GAS can injure or kill.

- Shut off shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.

HOT PARTS can cause severe burns.

- Do not touch hot parts bare handed.
- Allow cooling period before working on gun or torch.

MAGNETIC FIELDS can affect pacemakers.

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

CYLINDERS can explode if damaged.

Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder − explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.
- Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

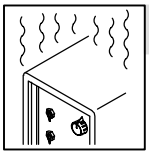
1-3. Additional Symbols For Installation, Operation, And Maintenance

FIRE OR EXPLOSION hazard.

- Do not install or place unit on, over, or near combustible surfaces.
- Do not install unit near flammables.
- Do not overload building wiring − be sure power supply system is properly sized, rated, and protected to handle this unit.

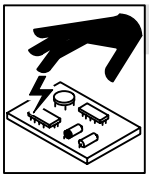
FALLING UNIT can cause injury.

- Use lifting eye to lift unit only, NOT running gear, gas cylinders, or any other accessories.
- Use equipment of adequate capacity to lift and support unit.
- If using lift forks to move unit, be sure forks are long enough to extend beyond opposite side of unit.



OVERUSE can cause OVERHEATING

- Allow cooling period; follow rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block or filter airflow to unit.



STATIC (ESD) can damage PC boards.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.

MOVING PARTS can cause injury.

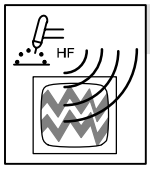
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.

WELDING WIRE can cause injury.

- Do not press gun trigger until instructed to do so.
- Do not point gun toward any part of the body, other people, or any metal when threading welding wire.

MOVING PARTS can cause injury.

- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.



H.F. RADIATION can cause interference.

- High-frequency (H.F.) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency source doors and panels tightly shut, keep spark gaps at correct setting, and use grounding and shielding to minimize the possibility of interference.

ARC WELDING can cause interference.

- Electromagnetic energy can interfere with sensitive electronic equipment such as computers and computer-driven equipment such as robots.
- Be sure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and down low, such as on the floor.
- Locate welding operation 100 meters from any sensitive electronic equipment.
- Be sure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take extra measures such as moving the welding machine, using shielded cables, using line filters, or shielding the work area.

1-4. Principal Safety Standards

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami FL 33126

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices For Occupation And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting And Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

1-5. EMF Information

Considerations About Welding And The Effects Of Low Frequency Electric And Magnetic Fields

Welding current, as it flows through welding cables, will cause electromagnetic fields. There has been and still is some concern about such fields. However, after examining more than 500 studies spanning 17 years of research, a special blue ribbon committee of the National Research Council concluded that: “The body of evidence, in the committee’s judgment, has not demonstrated that exposure to power-frequency electric and magnetic fields is a human-health hazard.” However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.

To reduce magnetic fields in the workplace, use the following procedures:

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cables around your body.
4. Keep welding power source and cables as far away from operator as practical.
5. Connect work clamp to workpiece as close to the weld as possible.

About Pacemakers:

Pacemaker wearers consult your doctor first. If cleared by your doctor, then following the above procedures is recommended.

SECTION 1 − CONSIGNES DE SECURITE − LIRE AVANT UTILISATION

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1-1. Signification des symboles

Signifie Mise en garde ! Soyez vigilant ! Cette procédure présente des risques de danger ! Ceux-ci sont identifiés par des symboles adjacents aux directives.

▲ **Identifie un message de sécurité particulier.**

☞ *Signifie NOTA ; n'est pas relatif à la sécurité.*

Ce groupe de symboles signifie Mise en garde ! Soyez vigilant ! Il y a des risques de danger reliés aux CHOCS ÉLECTRIQUES, aux PIÈCES EN MOUVEMENT et aux PIÈCES CHAUDES. Reportez-vous aux symboles et aux directives ci-dessous afin de connaître les mesures à prendre pour éviter tout danger.

1-2. Dangers relatifs au soudage à l'arc

▲ **Les symboles présentés ci-après sont utilisés tout au long du présent manuel pour attirer votre attention et identifier les risques de danger. Lorsque vous voyez un symbole, soyez vigilant et suivez les directives mentionnées afin d'éviter tout danger. Les consignes de sécurité présentées ci-après ne font que résumer l'information contenue dans les normes de sécurité énumérées à la section 1-4. Veuillez lire et respecter toutes ces normes de sécurité.**

▲ **L'installation, l'utilisation, l'entretien et les réparations ne doivent être confiés qu'à des personnes qualifiées.**

▲ **Au cours de l'utilisation, tenir toute personne à l'écart et plus particulièrement les enfants.**

UN CHOC ÉLECTRIQUE peut tuer.

Un simple contact avec des pièces électriques peut provoquer une électrocution ou des blessures graves. L'électrode et le circuit de soudage sont sous tension dès que l'appareil est sur ON. Le circuit d'entrée et les circuits internes de l'appareil sont également sous tension à ce moment-là. En soudage semi-automatique ou automatique, le fil, le dévidoir, le logement des galets d'entraînement et les pièces métalliques en contact avec le fil de soudage sont sous tension. Des matériels mal installés ou mal mis à la terre présentent un danger.

- Ne jamais toucher les pièces électriques sous tension.
- Porter des gants et des vêtements de protection secs ne comportant pas de trous.
- S'isoler de la pièce et de la terre au moyen de tapis ou d'autres moyens isolants suffisamment grands pour empêcher le contact physique éventuel avec la pièce ou la terre.
- Ne pas se servir de source électrique àcourant électrique dans les zones humides, dans les endroits confinés ou là où on risque de tomber.
- Se servir d'une source électrique àcourant électrique UNIQUEMENT si le procédé de soudage le demande.
- Si l'utilisation d'une source électrique àcourant électrique s'avère nécessaire, se servir de la fonction de télécommande si l'appareil en est équipé.
- Couper l'alimentation ou arrêter le moteur avant de procéder à l'installation, à la réparation ou à l'entretien de l'appareil. Déverrouiller l'alimentation selon la norme OSHA 29 CFR 1910.147 (voir normes de sécurité).
- Installer et mettre à la terre correctement cet appareil conformément à son manuel d'utilisation et aux codes nationaux, provinciaux et municipaux.
- Toujours vérifier la terre du cordon d'alimentation − Vérifier et s'assurer que le fil de terre du cordon d'alimentation est bien raccordé à la borne de terre du sectionneur ou que la fiche du cordon est raccordée à une prise correctement mise à la terre.
- En effectuant les raccordements d'entrée fixer d'abord le conducteur de mise à la terre approprié et contre-vérifier les connexions.
- Vérifier fréquemment le cordon d'alimentation pour voir s'il n'est pas endommagé ou dénudé − remplacer le cordon immédiatement s'il est endommagé − un câble dénudé peut provoquer une électrocution.
- Mettre l'appareil hors tension quand on ne l'utilise pas.
- Ne pas utiliser des câbles usés, endommagés, de grosseur insuffisante ou mal épissés.
- Ne pas enrouler les câbles autour du corps.
- Si la pièce soudée doit être mise à la terre, le faire directement avec un câble distinct − ne pas utiliser le connecteur de pièce ou le câble de retour.
- Ne pas toucher l'électrode quand on est en contact avec la pièce, la terre ou une électrode provenant d'une autre machine.
- N'utiliser qu'un matériel en bon état. Réparer ou remplacer sur-le-champ les pièces endommagées. Entretenir l'appareil conformément à ce manuel.
- Porter un harnais de sécurité quand on travaille en hauteur.
- Maintenir solidement en place tous les panneaux et capots.
- Fixer le câble de retour de façon à obtenir un bon contact métal-métal avec la pièce à souder ou la table de travail, le plus près possible de la soudure.
- Isoler la pince de masse quand pas mis à la pièce pour éviter le contact avec tout objet métallique.

Il y a DU COURANT CONTINU IMPORTANT dans les convertisseurs après la suppression de l'alimentation électrique.

- Arrêter les convertisseurs, débrancher le courant électrique, et décharger les condensateurs d'alimentation selon les instructions indiquées dans la partie entretien avant de toucher les pièces.

LES FUMÉES ET LES GAZ peuvent être dangereux.

Le soudage génère des fumées et des gaz. Leur inhalation peut être dangereux pour votre santé.

- Eloigner votre tête des fumées. Ne pas respirer les fumées.
- A l'intérieur, ventiler la zone et/ou utiliser un échappement au niveau de l'arc pour l'évacuation des fumées et des gaz de soudage.
- Si la ventilation est insuffisante, utiliser un respirateur à alimentation d'air homologué.
- Lire les spécifications de sécurité des matériaux (MSDSs) et les instructions du fabricant concernant les métaux, les consommables, les revêtements, les nettoyants et les dégraisseurs.
- Travailler dans un espace fermé seulement s'il est bien ventilé ou en portant un respirateur à alimentation d'air. Demander toujours à un surveillant dûment formé de se tenir à proximité. Des fumées et des gaz de soudage peuvent déplacer l'air et abaisser le niveau d'oxygène provoquant des blessures ou des accidents mortels. S'assurer que l'air de respiration ne présente aucun danger.
- Ne pas souder dans des endroits situés à proximité d'opérations de dégraissage, de nettoyage ou de pulvérisation. La chaleur et les rayons de l'arc peuvent réagir en présence de vapeurs et former des gaz hautement toxiques et irritants.
- Ne pas souder des métaux munis d'un revêtement, tels que l'acier galvanisé, plaqué en plomb ou au cadmium à moins que le revêtement n'ait été enlevé dans la zone de soudure, que l'endroit soit bien ventilé, et si nécessaire, en portant un respirateur à alimentation d'air. Les revêtements et tous les métaux renfermant ces éléments peuvent dégager des fumées toxiques en cas de soudage.

LES RAYONS DE L'ARC peuvent provoquer des brûlures dans les yeux et sur la peau.

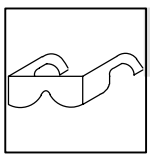
Le rayonnement de l'arc du procédé de soudage génère des rayons visibles et invisibles intenses (ultraviolets et infrarouges) susceptibles de provoquer des brûlures dans les yeux et sur la peau. Des étincelles sont projetées pendant le soudage.

- Porter un casque de soudage muni d'un écran de filtre approprié pour protéger votre visage et vos yeux pendant le soudage ou pour regarder (voir ANSI Z49.1 et Z87.1 énuméré dans les normes de sécurité).
- Porter des protections approuvés pour les oreilles si le niveau sondre est trop élevé.
- Utiliser des écrans ou des barrières pour protéger des tiers de l'éclair et de l'éblouissement; demander aux autres personnes de ne pas regarder l'arc.
- Porter des vêtements de protection constitué dans une matière durable, résistant au feu (cuir ou laine) et une protection des pieds.

LE SOUDAGE peut provoquer un incendie ou une explosion.

Le soudage effectué sur des conteneurs fermés tels que des réservoirs, tambours ou des conduites peut provoquer leur éclatement. Des étincelles peuvent être projetées de l'arc de soudure. La projection d'étincelles, des pièces chaudes et des équipements chauds peut provoquer des incendies et des brûlures. Le contact accidentel de l'électrode avec des objets métalliques peut provoquer des étincelles, une explosion, un surchauffement ou un incendie. Avant de commencer le soudage, vérifier et s'assurer que l'endroit ne présente pas de danger.

- Se protéger et d'autres personnes de la projection d'étincelles et de métal chaud.
- Ne pas souder dans un endroit là où des étincelles peuvent tomber sur des substances inflammables.
- Déplacer toutes les substances inflammables à une distance de 10,7 m de l'arc de soudage. En cas d'impossibilité les recouvrir soigneusement avec des protections homologués.
- Des étincelles et des matériaux chauds du soudage peuvent facilement passer dans d'autres zones en traversant de petites fissures et des ouvertures.
- Surveiller tout déclenchement d'incendie et tenir un extincteur à proximité.
- Le soudage effectué sur un plafond, plancher, paroi ou séparation peut déclencher un incendie de l'autre côté.
- Ne pas effectuer le soudage sur des conteneurs fermés tels que des réservoirs, tambours, ou conduites, à moins qu'ils n'aient été préparés correctement conformément à AWS F4.1 (voir les normes de sécurité).
- Brancher le câble sur la pièce le plus près possible de la zone de soudage pour éviter le transport du courant sur une longue distance par des chemins inconnus éventuels en provoquant des risques d'électrocution et d'incendie.
- Ne pas utiliser le poste de soudage pour dégeler des conduites gelées.
- En cas de non utilisation, enlever la baguette d'électrode du porte-électrode ou couper le fil à la pointe de contact.
- Porter des vêtements de protection dépourvus d'huile tels que des gants en cuir, une chemise en matériau lourd, des pantalons sans revers, des chaussures hautes et un couvre chef.
- Avant de souder, retirer toute substance combustible de vos poches telles qu'un allumeur au butane ou des allumettes.



DES PARTICULES VOLANTES peuvent blesser les yeux.

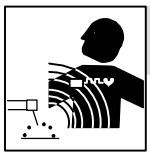
- Le soudage, l'écaillement, le passage de la pièce à la brosse en fil de fer, et le meulage génèrent des étincelles et des particules métalliques volantes. Pendant la période de refroidissement des soudures, elles risquent de projeter du laitier.
- Porter des lunettes de sécurité avec écrans latéraux ou un écran facial.

LES ACCUMULATIONS DE GAZ risquent de provoquer des blessures ou même la mort.

- Fermer l'alimentation du gaz protecteur en cas de non utilisation.
- Veiller toujours à bien aérer les espaces confinés ou se servir d'un respirateur d'adduction d'air homologué.

DES PIÈCES CHAUDES peuvent provoquer des brûlures graves.

- Ne pas toucher des parties chaudes à mains nues
- Prévoir une période de refroidissement avant d'utiliser le pistolet ou la torche.



LES CHAMPS MAGNÉTIQUES peuvent affecter les stimulateurs cardiaques.

- Porteurs de stimulateur cardiaque, restez à distance.
- Les porteurs d'un stimulateur cardiaque doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de gougeage ou de soudage par points.

LE BRUIT peut affecter l'ouïe.

Le bruit des processus et des équipements peut affecter l'ouïe.

- Porter des protections approuvés pour les oreilles si le niveau sondre est trop élevé.

Si des BOUTEILLES sont endommagées, elles pourront exploser.

Des bouteilles de gaz protecteur contiennent du gaz sous haute pression. Si une bouteille est endommagée, elle peut exploser. Du fait que les bouteilles de gaz font normalement partie du procédé de soudage, les manipuler avec précaution.

- Protéger les bouteilles de gaz comprimé d'une chaleur excessive, des chocs mécaniques, du laitier, des flammes ouvertes, des étincelles et des arcs.
- Placer les bouteilles debout en les fixant dans un support stationnaire ou dans un porte-bouteilles pour les empêcher de tomber ou de se renverser.
- Tenir les bouteilles éloignées des circuits de soudage ou autres circuits électriques.
- Ne jamais placer une torche de soudage sur une bouteille à gaz.
- Une électrode de soudage ne doit jamais entrer en contact avec une bouteille.
- Ne jamais souder une bouteille pressurisée − risque d'explosion.
- Utiliser seulement des bouteilles de gaz protecteur, régulateurs, tuyaux et raccords convenables pour cette application spécifique; les maintenir ainsi que les éléments associés en bon état.
- Ne pas tenir la tête en face de la sortie en ouvrant la soupape de la bouteille.
- Maintenir le chapeau de protection sur la soupape, sauf en cas d'utilisation ou de branchement de la bouteille.
- Lire et suivre les instructions concernant les bouteilles de gaz comprimé, les équipements associés et les publications P-1 CGA énumérées dans les normes de sécurité.

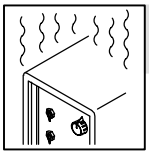
1-3. Dangers supplémentaires en relation avec l'installation, le fonctionnement et la maintenance

Risque D'INCENDIE OU D'EXPLOSION.

- Ne pas placer l'appareil sur, au-dessus ou à proximité de surfaces infllammables.
- Ne pas installer l'appareil à proximité de produits inflammables
- Ne pas surcharger l'installation électrique − s"assurer que l'alimentation est correctement dimensionné et protégé avant de mettre l'appareil en service.

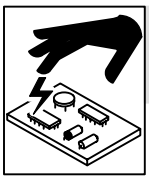
LA CHUTE DE L'APPAREIL peut blesser.

- Utiliser l'anneau de levage uniquement pour soulever l'appareil, NON PAS les chariot, les bouteilles de gaz ou tout autre accessoire.
- Utiliser un engin d'une capacité appropriée pour soulever l'appareil.
- En utilisant des fourches de levage pour déplacer l'unité, s'assurer que les fourches sont suffisamment longues pour dépasser du côté opposé de l'appareil.



L'EMPLOI EXCESSIF peut SURCHAUFFER L'ÉQUIPEMENT.

- Prévoir une période de refroidissement, respecter le cycle opératoire nominal.
- Réduire le courant ou le cycle opératoire avant de recommancer le soudage.
- Ne pas obstruer les passages d'air du poste.



LES CHARGES ÉLECTROSTATIQUES peuvent endommager les circuits imprimés.

- Établir la connexion avec la barrette de terre avant de manipuler des cartes ou des pièces.
- Utiliser des pochettes et des boîtes antistatiques pour stocker, déplacer ou expédier des cartes de circuits imprimes.

DES ORGANES MOBILES peuvent provoquer des blessures.

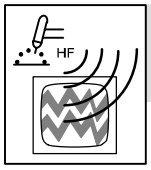
- Ne pas s'approcher des organes mobiles.
- Ne pas s'approcher des points de coincement tels que des rouleaux de commande.

LES FILS DE SOUDAGE peuvent provoquer des blessures.

- Ne pas appuyer sur la gachette avant d'en avoir reçu l'instruction.
- Ne pas diriger le pistolet vers soi, d'autres personnes ou toute pièce mécanique en engageant le fil de soudage.

DES ORGANES MOBILES peuvent provoquer des blessures.

- Rester à l'écart des organes mobiles comme le ventilateur.
- Maintenir fermés et fixement en place les portes, panneaux, recouvrements et dispositifs de protection.



LE RAYONNEMENT HAUTE FRÉQUENCE (H.F.) risque de provoquer des interférences.

- Le rayonnement haute frequence peut provoquer des interférences avec les équipements de radio−navigation et de communication, les services de sécurité et les ordinateurs.
- Demander seulement à des personnes qualifiées familiarisées avec des équipements électroniques de faire fonctionner l'installation.
- L'utilisateur est tenu de faire corriger rapidement par un électricien qualifié les interférences résultant de l'installation.
- Si le FCC signale des interférences, arrêter immédiatement l'appareil.
- Effectuer régulièrement le contrôle et l'entretien de l'installation.
- Maintenir soigneusement fermés les portes et les panneaux des sources de haute fréquence, maintenir les éclateurs à une distance correcte et utiliser une terre et et un blindage pour réduire les interférences éventuelles.

LE SOUDAGE À L'ARC risque de provoquer des interférences.

- L'énergie électromagnétique risque de provoquer des interférences pour l'équipement électronique sensible tel que les ordinateurs et l'équipement commandé par ordinateur tel que les robots.
- Veiller à ce que tout l'équipement de la zone de soudage soit compatible électromagnétiquement.
- Pour réduire la possibilité d'interférence, maintenir les câbles de soudage aussi courts que possible, les grouper, et les poser aussi bas que possible (ex. par terre).
- Veiller à souder à une distance de 100 mètres de tout équipement électronique sensible.
- Veiller à ce que ce poste de soudage soit posé et mis à la terre conformément à ce mode d'emploi.
- En cas d'interférences après avoir pris les mesures précédentes, il incombe à l'utilisateur de prendre des mesures supplémentaires telles que le déplacement du poste, l'utilisation de câbles blindés, l'utilisation de filtres de ligne ou la pose de protecteurs dans la zone de travail.

LES CHAMPS MAGNÉTIQUES peuvent affecter les stimulateurs cardiaques.

- Porteurs de stimulateur cardiaque, restez à distance.
- Les porteurs d'un stimulateur cardiaque doivent d'abord consulter leur médecin avant de s'approcher des opérations de soudage à l'arc, de gougeage ou de soudage par points.

1-4. Principales normes de sécurité

Safety in Welding and Cutting, norme ANSI Z49.1, de l'American Welding Society, 550 N.W. Lejeune Rd, Miami FL 33126

Safety and Health Sandards, OSHA 29 CFR 1910, du Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practice for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, norme AWS F4.1, de l'American Welding Society, 550 N.W. Lejeune Rd, Miami FL 33126

National Electrical Code, NFPA Standard 70, de la National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, de la Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Règles de sécurité en soudage, coupage et procédés connexes, norme CSA W117.2, de l'Association canadienne de normalisation, vente de normes, 178 Rexdale Boulevard, Rexdale (Ontario) Canada M9W 1R3.

Safe Practices For Occupation And Educational Eye And Face Protection, norme ANSI Z87.1, de l'American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, norme NFPA 51B, de la National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

1-5. Information sur les champs électromagnétiques

Données sur le soudage électrique et sur les effets, pour l'organisme, des champs magnétiques basse fréquence

Le courant de soudage, pendant son passage dans les câbles de soudage, causera des champs électromagnétiques. Il y a eu et il y a encore un certain souci à propos de tels champs. Cependant, après avoir examiné plus de 500 études qui ont été faites pendant une période de recherche de 17 ans, un comité spécial ruban bleu du National Research Council a conclu: "L'accumulation de preuves, suivant le jugement du comité, n'a pas démontré que l'exposition aux champs magnétiques et champs électriques à haute fréquence représente un risque à la santé humaine". Toutefois, des études sont toujours en cours et les preuves continuent à être examinées. En attendant que les conclusions finales de la recherche soient établies, il vous serait souhaitable de réduire votre exposition aux champs électromagnétiques pendant le soudage ou le coupage.

Afin de réduire les champs électromagnétiques dans l'environnement de travail, respecter les consignes suivantes :

1 Garder les câbles ensembles en les torsadant ou en les attachant avec du ruban adhésif.

2 Mettre tous les câbles du côté opposé de l'opérateur.

3 Ne pas courber pas et ne pas entourer pas les câbles autour de votre corps.

4 Garder le poste de soudage et les câbles le plus loin possible de vous.

5 Relier la pince de masse le plus près possible de la zone de soudure.

Consignes relatives aux stimulateurs cardiaques :

Les personnes qui portent un stimulateur cardiaque doivent avant tout consulter leur docteur. Si vous êtes déclaré apte par votre docteur, il est alors recommandé de respecter les consignes ci−dessus.

SECTION 2 − DEFINITIONS

2-1. Warning Label Definitions

A.. Warning! Watch Out! There are possible hazards as shown by the symbols.

B.. Drive rolls can injure fingers

C.. Welding wire and drive parts are at welding voltage during operation − keep hands and metal objects clear.

1 Electric shock can kill.

1.1 Wear dry insulating gloves. Do not touch electrode with bare hand. Do not wear wet or damaged gloves.

1.2 Protect yourself from electric shock by insulating yourself from work and ground.

1.3 Disconnect input plug or power before working on machine.

2 Breathing welding fumes can be hazardous to your health.

2.1 Keep your head out of the fumes.

2.2 Use forced ventilation or local exhaust to remove the fumes.

2.3 Use ventilating fan to remove fumes.

3 Welding sparks can cause explosion or fire.

3.1 Keep flammables away from welding. Don't weld near flammables.

3.2 Welding sparks can cause fires. Have a fire extinguisher nearby and have a watch person ready to use it.

3.3 Do not weld on drums or any closed containers.

4 Arc rays can burn eyes and injure skin.

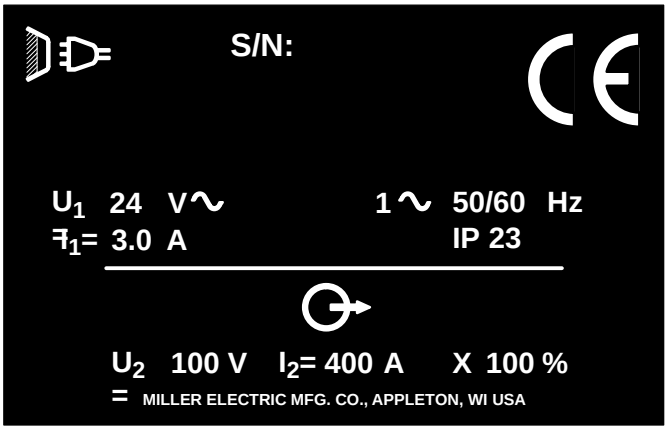
4.1 Wear hat and safety glasses. Use ear protection and button shirt collar. Use welding helmet with correct shade of filter. Wear complete body protection.

5 Become trained and read the instructions before working on the machine or welding.

6 Do not remove or paint over (cover) the label.

2-2. Manufacturer's Rating Label for CE Products

For label location see Section 3-4.



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2-3. Symbols And Definitions

NOTE *Some symbols are found only on CE products.*

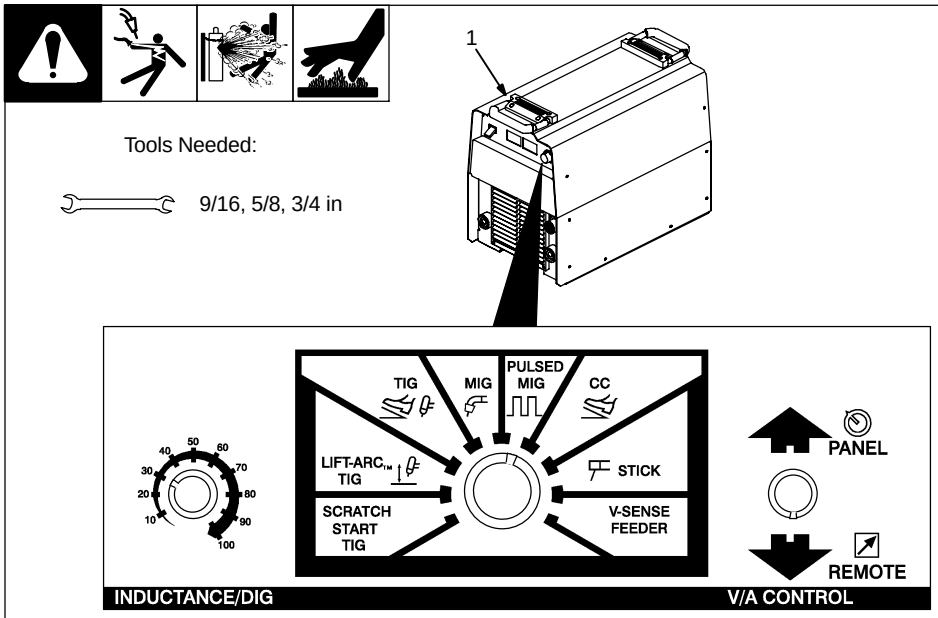
	Output		Alternating Current	A	Amperes	V	Volts
	Cold Jog (Inch) Towards Workpiece	X	Duty Cycle	IP	Degree Of Protection	Hz	Hertz
	Purge		Parameter Select		Trigger		Line Connection
	Increase		Read Instructions		Trigger Hold On		Trigger Hold Off
	Trigger Hold On Indicator Light		Trigger Hold Off Indicator Light	U_1	Primary Voltage	U_2	Conventional Load Voltage
I_1	Primary Current	I_2	Rated Welding Current		Remote		Wire Feed Spool Gun
	Wire Feed		Water (Coolant) Output		Gas Output	%	Percent
1	Single Phase						

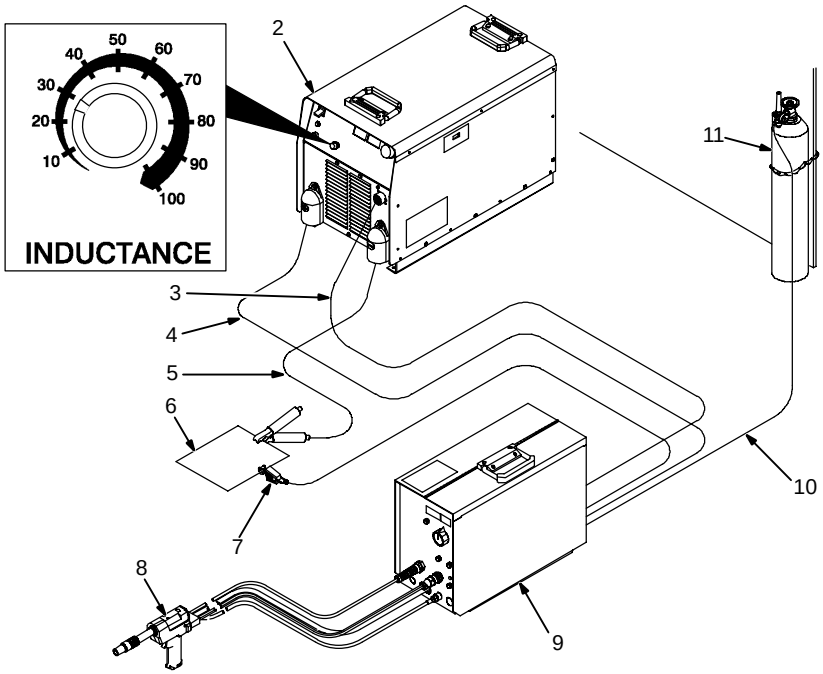
SECTION 3 − INSTALLATION

3-1. Specifications

Type of Input Power	Welding Power Source Type	Wire Feed Speed Range	Wire Diameter Range	Welding Circuit Rating	IP Rating	Overall Dimensions	Weight
24 Volts AC Single-Phase 3 Amperes 50/60 Hertz	Constant Voltage (CV) DC For GMAW Or Constant Voltage(CV) / Constant Current (CC) DC For GMAW-P All Need 14-Pin And Contactor Control	70 To 875 ipm (1.8 To 22.2 mpm)	.030 To 1/16 in (0.8 To 1.6 mm) Max Spool Capacity: 12 in (305 mm)	100 Volts, 400 Amperes, 100% Duty Cycle	IP 23	Length: 21-1/4 in (540 mm) Width: 9-1/2 in (241 mm) Height: 16 in (406 mm)	Net: 48 lb (21.8 kg) Ship: 56 lb (24.5 kg)

3-2. Typical Air-Cooled System Connections





1 300/400 Ampere Model CC/CV Inverter Welding Power Source

☞ *Use settings shown for both pulse MIG welding and MIG welding.*

2 450 Ampere Model CV Inverter Welding Power Source

System can be set up with a variety of conventional Constant Voltage (CV) welding power sources.

3 14-Pin Plug And Interconnecting Cord

4 Positive (+) Weld Cable

5 Negative (−) Weld Cable

Select and prepare weld cables according to welding power source Owner's Manual.

6 Workpiece

7 Voltage Sensing Lead (Optional Use)

8 Air-Cooled Gun

9 Wire Feeder

▲ **Do not use gas pressure above 50 psi (345 kPa) or mechanical gas valve in gun can leak.**

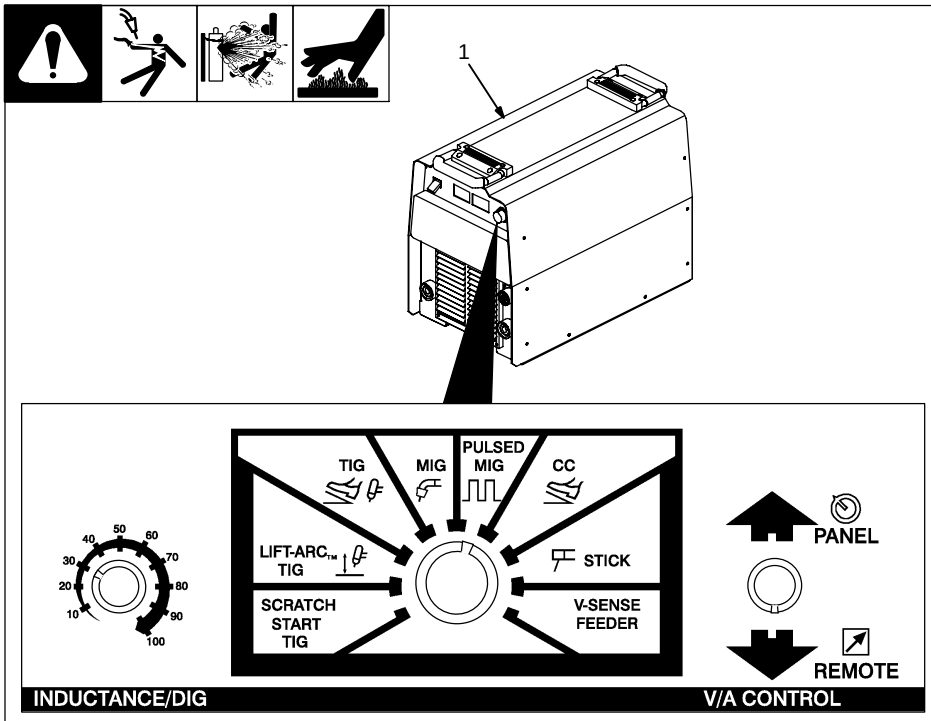
10 Gas Hose

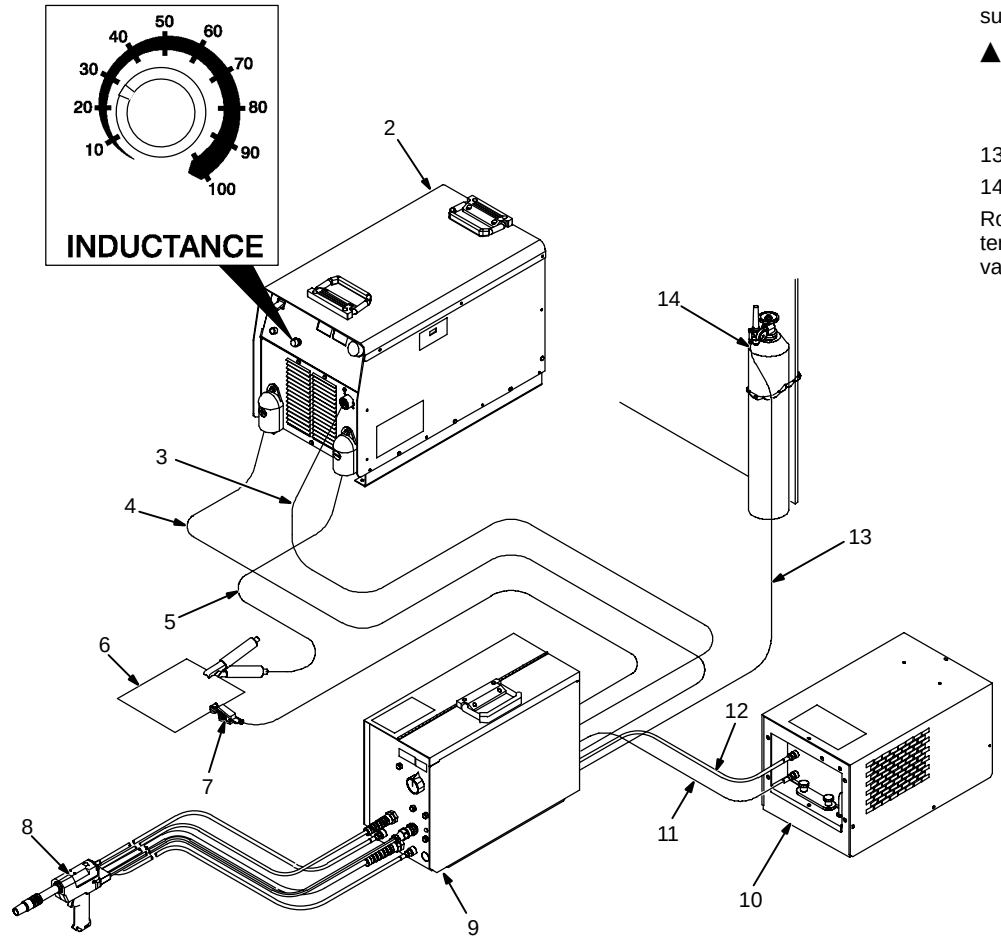
11 Gas Cylinder

Route hose from regulator/flowmeter and connect to shielding gas valve fitting.

801 809 / Ref. 175 086 / Ref. 180 311-B

3-3. Typical Water-Cooled System Connections





1 300/400 Ampere Model CC/CV Inverter Welding Power Source

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2 450 Ampere Model CV Inverter Welding Power Source

System can be set up with a variety of conventional Constant Voltage (CV) welding power sources.

3 14-Pin Plug And Interconnecting Cord

4 Positive (+) Weld Cable

5 Negative (−) Weld Cable

Select and prepare weld cables according to welding power source Owner's Manual.

6 Workpiece

7 Voltage Sensing Lead (Optional Use)

8 Water-Cooled Gun

9 Wire Feeder

10 Coolant Supply

11 Coolant In Hose

12 Coolant Out Hose

Connect hoses between coolant supply and wire feeder.

▲ **Do not use gas pressure above 50 psi (345 kPa) or mechanical gas valve in gun can leak.**

13 Gas Hose

14 Gas Cylinder

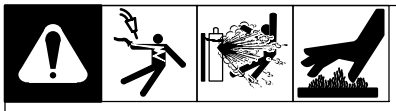
Route hose from regulator/flowmeter and connect to shielding gas valve fitting.

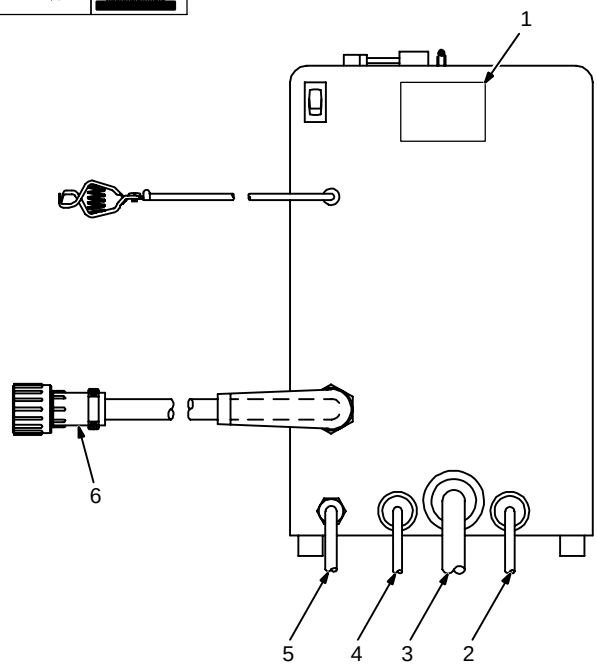
Tools Needed:

9/16, 5/8, 11/16, 3/4 in

801 810 / Ref. 175 086 / Ref. 180 311-B

3-4. Rear Panel Connections





1 Rating Label Location

2 Coolant Supply Hose

Route supply hose and connect to rear of Water To Gun fitting in feeder.

3 Weld Cable

If using conventional welding power source, route through reed relay in feeder. Connect to power block.

4 Coolant Return Hose

Route return hose and connect to rear of Weld/Water From Gun fitting or optional flow switch in feeder.

5 Gas Hose

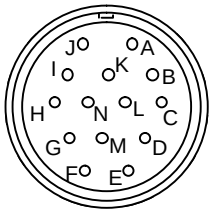
6 14-Pin Plug

Tools Needed:

9/16, 5/8, 11/16 in

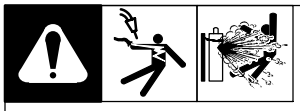
Ref. 800 689

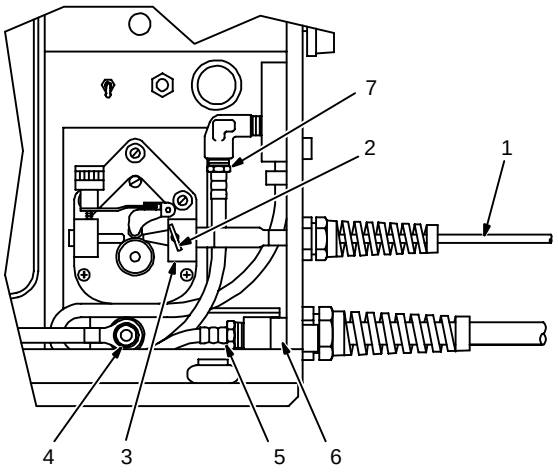
3-5. 14-Pin Plug Information

REMOTE 14	Pin*	Pin Information
	A	24 volts ac with respect to socket G.
	B	Contact closure to A completes 24 volts ac contactor control circuit.
	G	Circuit common for 24 volts AC circuit.
	D	Remote control circuit common.
	E	0 to +10 volts dc input command signal from remote control with respect to socket D.
	H	Voltage feedback; 0 to +10 volts dc, 1 volt per 10 arc volts.
	F	Current feedback; 0 to +10 volts dc, 1 volt per 100 amperes.
	M	CC/CV Select (+24 V = CV)
	N	Inductance (0-10 V)

*The remaining pins are not used.

3-6. Internal Connections for Water-Cooled Gun





1 Wire Conduit

2 Thumbscrew

3 Wire Conduit Block

Loosen thumbscrew and insert conduit into block. Tighten thumbscrew. Tighten strain relief.

4 Power Block Weld Cable Connection

5 Weld/Water From Gun Fitting

▲ **If using a recirculating coolant system, make connections directly to gun hose connections at wire feeder. Maintain a minimum 1 qt/min flow rate to prevent damage to gun parts.**

6 Water To Gun Fitting

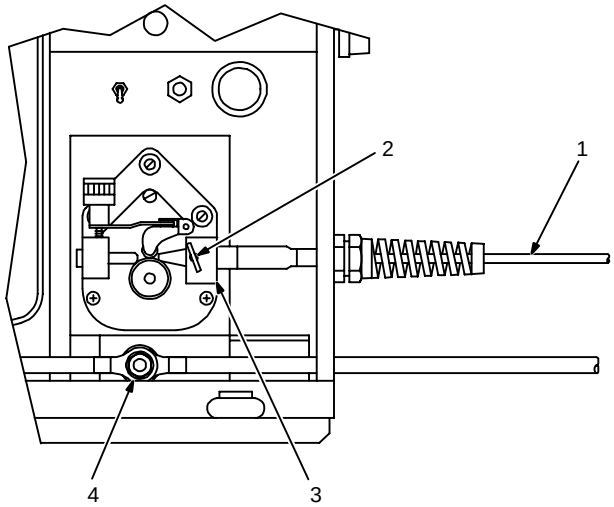
7 Optional Water Flow Switch Fitting

Tools Needed:

9/16, 11/16 in

Ref. 800 688-B

3-7. Internal Connections for Air-Cooled Gun



1 Wire Conduit

2 Thumbscrew

3 Wire Conduit Block

Loosen thumbscrew and insert conduit into block. Tighten thumbscrew. Tighten strain relief.

4 Power Block Weld Cable Connection

Tools Needed:

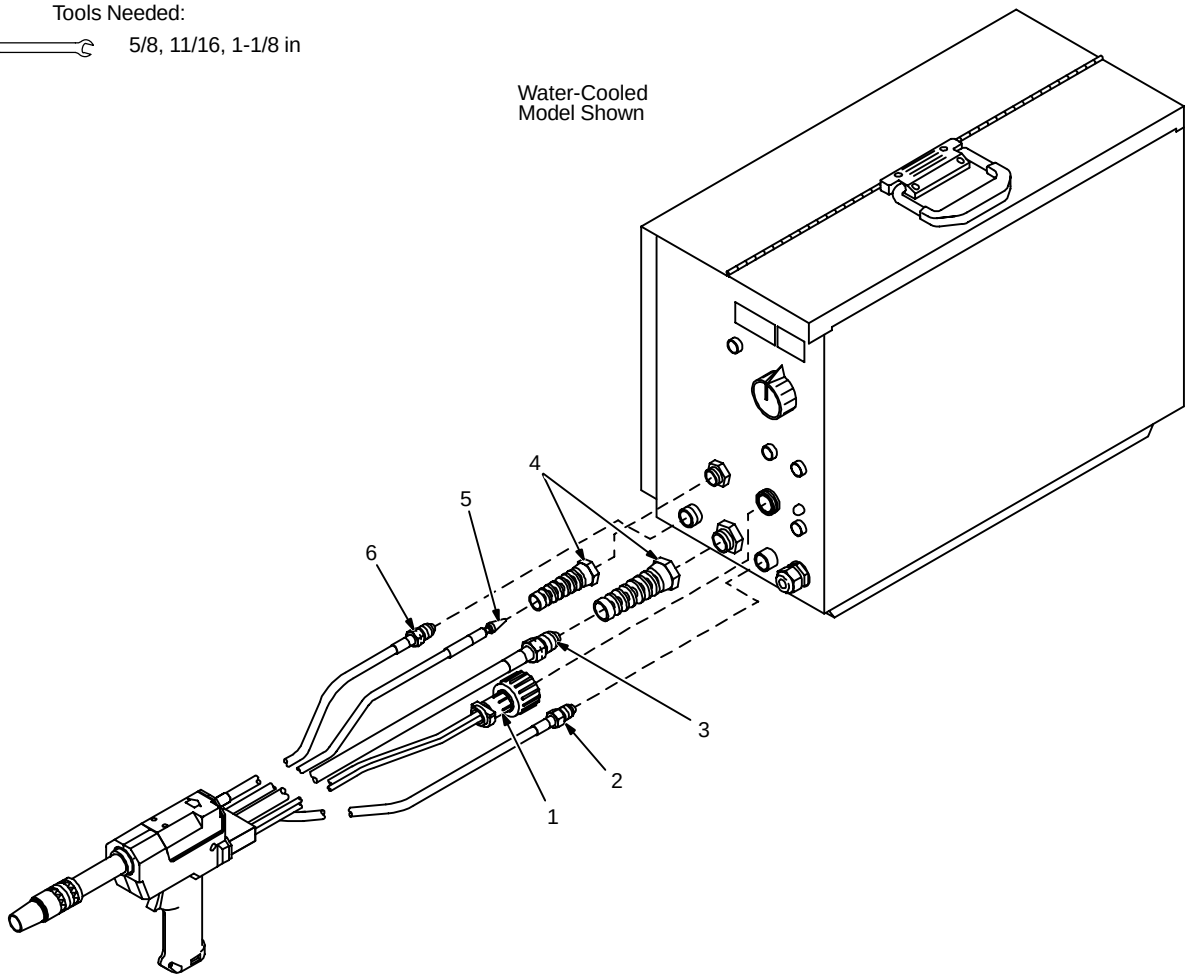
9/16 in

Ref. 801 052

3-8. Front Panel Connections for Gun

Tools Needed:

5/8, 11/16, 1-1/8 in



Ref. 800 688-B

Water-Cooled Guns:

1 Gun Control Cable

Insert plug into Gun Control receptacle, and tighten threaded collar.

2 Gas Hose

Connect to Gas fitting on feeder.

3 Power/Water Cable

4 Strain Relief

Remove strain relief as shown.

Route cable through strain relief and connect to Weld/Water From Gun outlet on feeder (left-hand threads). Reinstall strain relief.

5 Wire Conduit

Route through strain relief. Insert through front panel. Go to Section 3-6.

6 Water Hose

Connect to Water To Gun fitting on feeder (left-hand threads).

Air-Cooled Gun:

1 Gun Control Cable

Insert plug into Gun Control receptacle, and tighten threaded collar.

2 Gas Hose

Connect to Gas fitting on feeder.

3 Power Cable

Route cable through front panel and connect to power block. See Section 3-7.

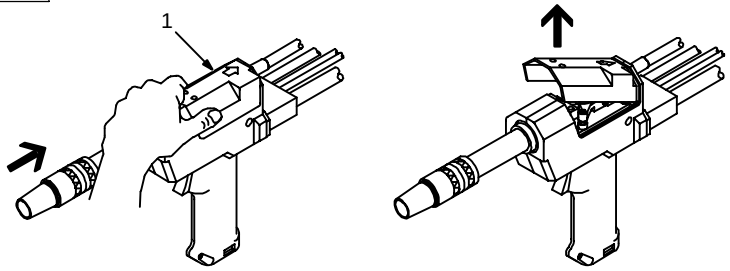
4 Strain Relief

Remove strain relief as shown.

5 Wire Conduit

Route through strain relief. Insert through front panel. Go to Section 3-7.

3-9. Removing Top Cover of Gun



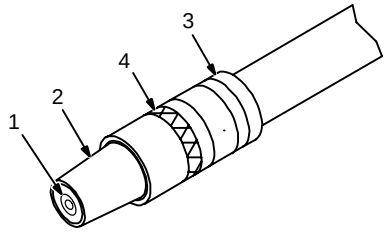
1 Top Cover

Push back and lift off as shown.

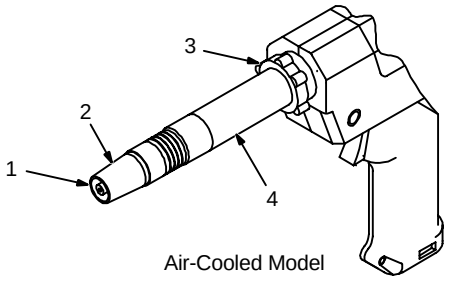
To reinstall cover, set rear of cover in gun, and push cover back, down, and forward until it clicks into position.

800 942

3-10. Adjusting Contact Tip Position



Water-Cooled Model



Air-Cooled Model

1 Contact Tip

2 Nozzle

Adjusting barrel changes contact tip location from 1/16 in (1.6 mm) out beyond end of nozzle to 1/4 in (6.3 mm) inside nozzle.

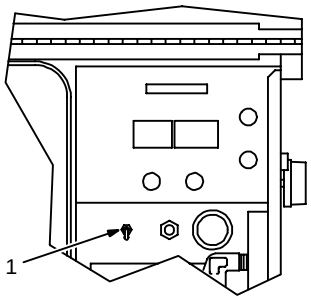
3 Jam Nut

4 Barrel

To change contact tip location, loosen jam nut, and turn barrel. Tighten jam nut.

Ref. 150 434 / Ref. 150 431

3-11. Setting Torque Switch



1 Torque Switch

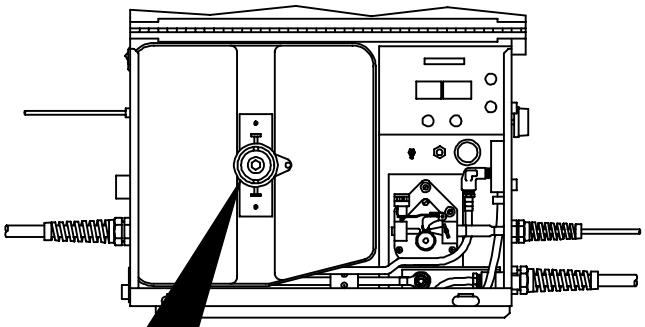
Use switch to select the force used to push wire. The up position is for high force, or torque. The down position is for low force, or torque.

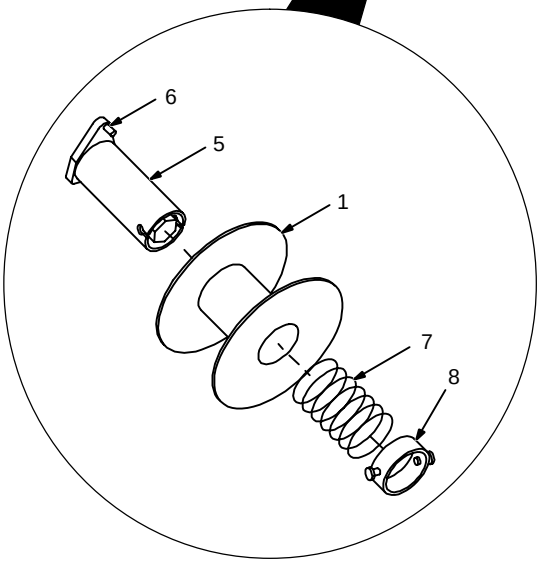
Use low position for .030 in (0.8 mm) Aluminum wire. Use high position for all other wire.

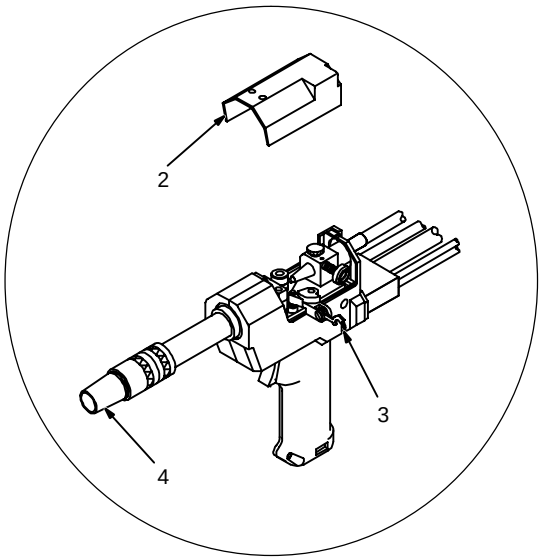
If welding wire appears to be kinked, nicked, or damaged, place switch in low torque position.

Ref. 800 690-A

3-12. Installing Wire Spool







1 Wire Spool
2 Top Cover
3 Pressure Roll Assembly
4 Gun Contact Tip

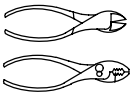
If wire spool is being replaced, open pressure roll assembly in gun, and cut welding wire off at contact tip.

Retract wire onto spool.

5 Hub
6 Hub Pin
7 Compression Spring (Optional For 8 in Spool)
8 Retaining Ring

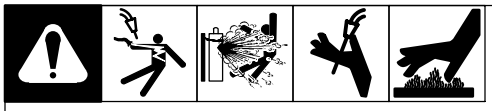
Install wire spool.

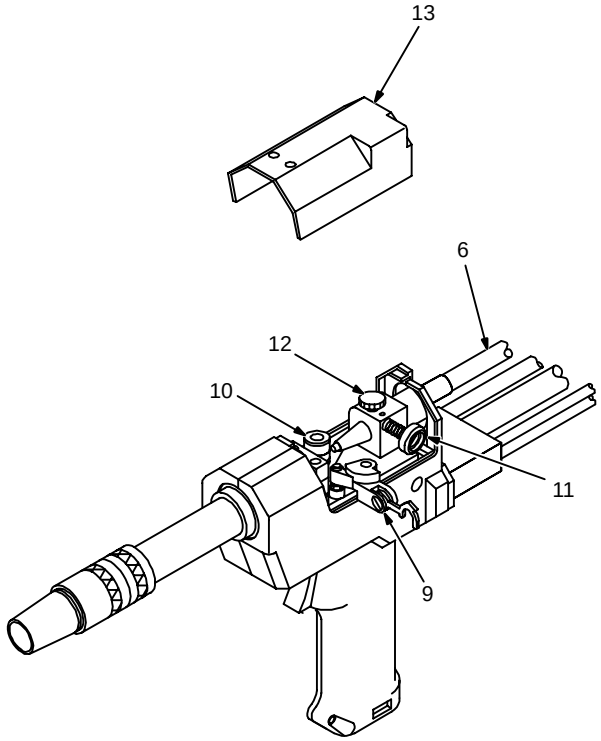
Tools Needed:



800 690-A / 800 945

3-13. Threading Welding Wire Through Feeder





1 Wire Spool Location
2 Tension Arm
3 Mounting Arm
4 Wire Inlet Guide
5 Feeder Drive Roll
6 Wire Conduit
7 Tension Thumbnut
8 Jog Button
9 Pressure Roll Assembly
10 Gun Drive Roll

For wire sizes .035 in (0.9 mm) and smaller use small groove, and .047 in (1.2 mm) and 1/16 in (1.6 mm) use large groove.

11 Pressure Adjustment Knob
12 Conduit Screw
13 Gun Cover

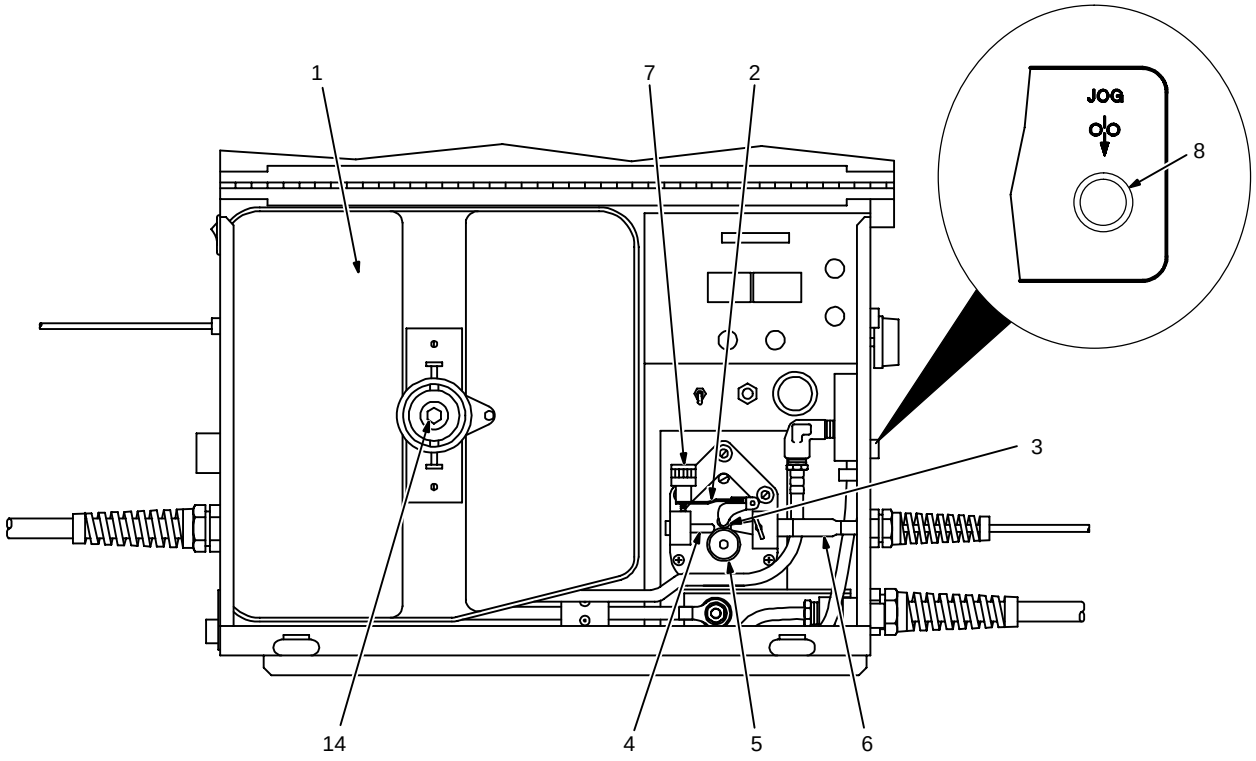
Hub Tension Adjustment

Turn On welding power source and wire feeder to make this adjustment.

Press and release Jog switch. Hub tension is okay if wire unwinds freely, but wire does not backlash when Jog switch is released.

14 Cap Screw

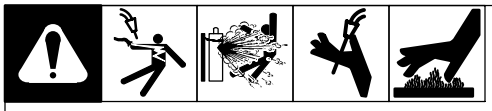
Turn cap screw to adjust hub tension. Do not overtighten. Close and latch door.

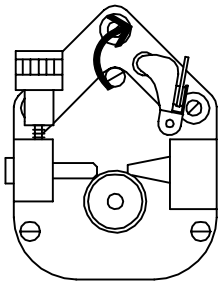


Tools Needed:

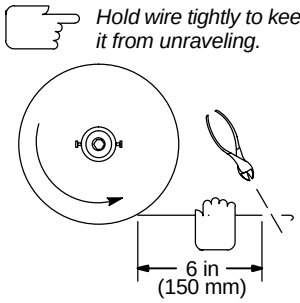
Ref. 800 945 / 800 690-A

3-14. Threading Welding Wire Through Feeder (Continued)

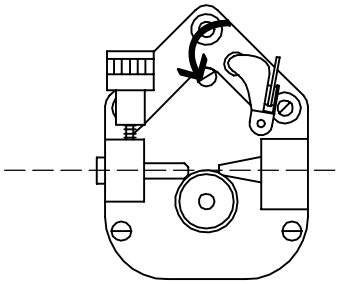




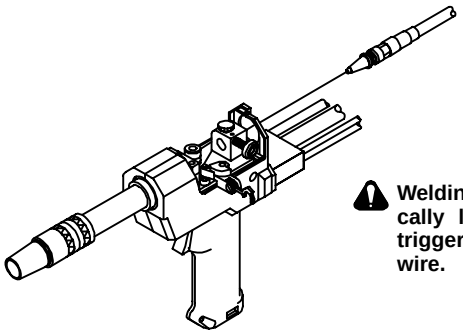
Open tension arm.



Pull and hold wire; cut off end.

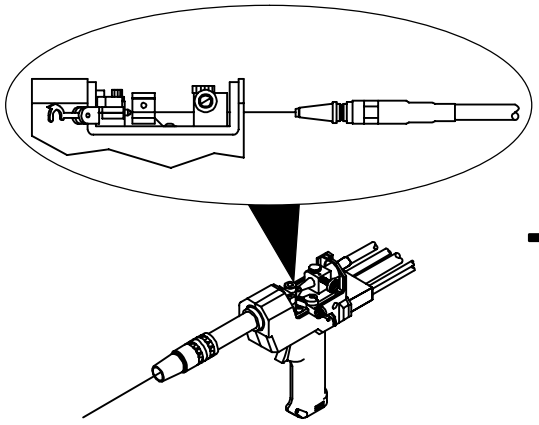


Thread wire thru inlet guide, along drive roll groove, and into wire conduit. Close tension arm. **Adjust tension as follows:** grasp spool with one hand, press Jog switch, and turn thumbnut clockwise until motor stalls when Jog switch is pressed. Back thumbnut off slightly.

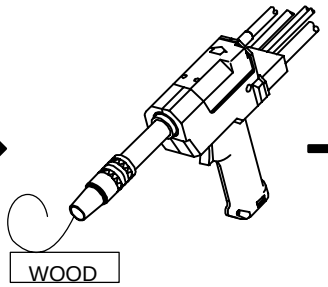


Welding wire is electrically live when gun trigger is used to jog wire.

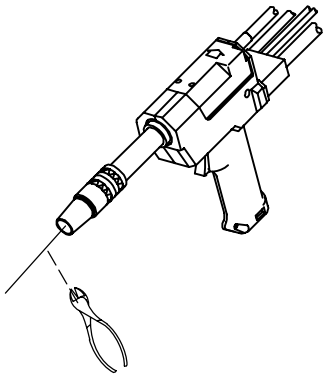
Lay wire conduit out straight. Remove wire conduit from rear of gun. Press Jog button until about 10 in (254 mm) of wire is sticking out of conduit.



Open pressure roll assembly. Insert wire thru conduit opening in rear of gun, past drive roll groove, and out contact tip. When wire conduit is seated in rear of gun, tighten screw to secure. Close pressure roll assembly.



Feed wire to check drive roll pressure. If necessary, adjust pressure adjustment knob in gun.



Cut off wire. Reinstall gun cover. Close and latch wire feeder doors.

Tools Needed:

Ref. 800 944

SECTION 4 − OPERATION

4-1. Operational Terms

NOTE ☞	*See Menu Guide for detailed programming steps.*

The following is a list of terms and their definitions as they apply to this wire feeder:

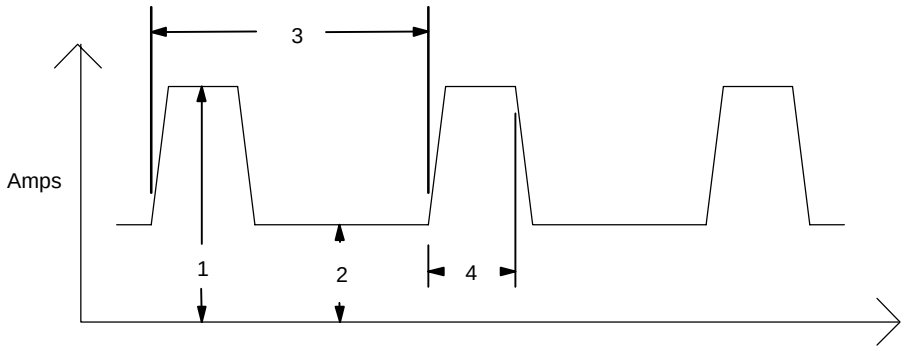
General Terms:

Adaptive Pulse Welding	The wire feeder automatically regulates pulse frequency to maintain a constant arc length, regardless of change in welding wire stickout.
Cold Wire Jog	When weld amperage is not present, wire feeds for about three seconds at set wire feed speed. Then the welding power source contactor deenergizes and wire continues to feed at the wire jog speed.
Inductance	As inductance increases, arc on time increases, and the weld puddle becomes more fluid.
Trim	Arc length adjustment in pulse welding. Increasing trim increases the actual arc length. Trim is replaced by volts in MIG programs.
Synergic	The operator programs pulse parameters for a specific wire feed speed. The wire feeder determines the pulse parameters between these wire feed speed increments.

Side Panel Terms:

Card Mode	Is used to select use of the optional data card storage and retrieval capabilities.
Dual Schedule Mode	Is used to select a pair of programs that can be used together.
Process Mode	Is used to select the type of process to be used, including Pulse, Adaptive Pulse, or Mig.
Sequence Mode	Is used to select and program the weld sequences which include weld, crater, burnback, postflow, preflow, and run-in.

4-2. Pulse Welding Terms



1 Apk = Peak Amperage

Increasing Apk increases penetration.

2 Abk = Background Amperage

Maintains arc between pulses.

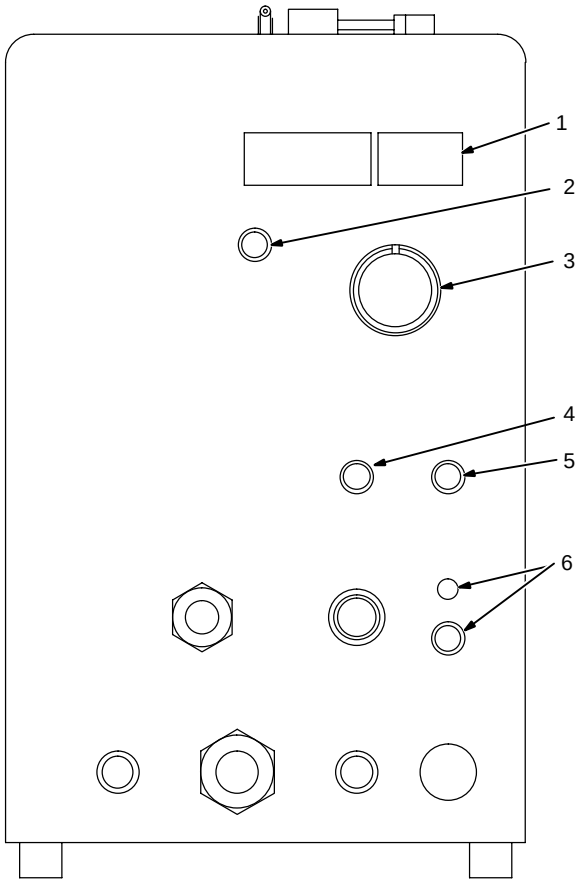
3 PPS = Pulses Per Second

Increasing PPS increases travel speed.

4 PWms = Pulse Width In Milliseconds

Increasing PWms increases bead width.

4-3. Front Panel Controls



800 687-A

1 Display

2 Parameter Select Button

Press button to move > on display.

3 Display Control Knob

Turn knob to change parameter pointed to by >.

Turning knob one click causes Trim (arc length) to increase/decrease by one or Volt to increase/decrease by 0.1.

When IPM is selected, turning knob one click causes wire feed speed (IPM) to increase/decrease by one inch per minute.

When Prg # is selected, turning knob one click causes program number (Prg #) to increase/decrease by one.

The program number cannot be changed while welding, with exception of Dual Schedule Mode (see Section 6-1).

Pulse is a default setting. To change type of process (Pulse, Adaptive Pulse, or MIG) use side panel controls.

4 Jog Button

Push to momentarily feed welding wire without energizing welding circuit or shielding gas valve.

Jog speed is varied using the Display Control knob while Jog button is pressed. Default setting is 200 IPM.

5 Purge Button

Push to momentarily energize gas valve without energizing the welding circuit.

Holding the Jog and Purge buttons at the same time will display pulse parameters on the side panel display.

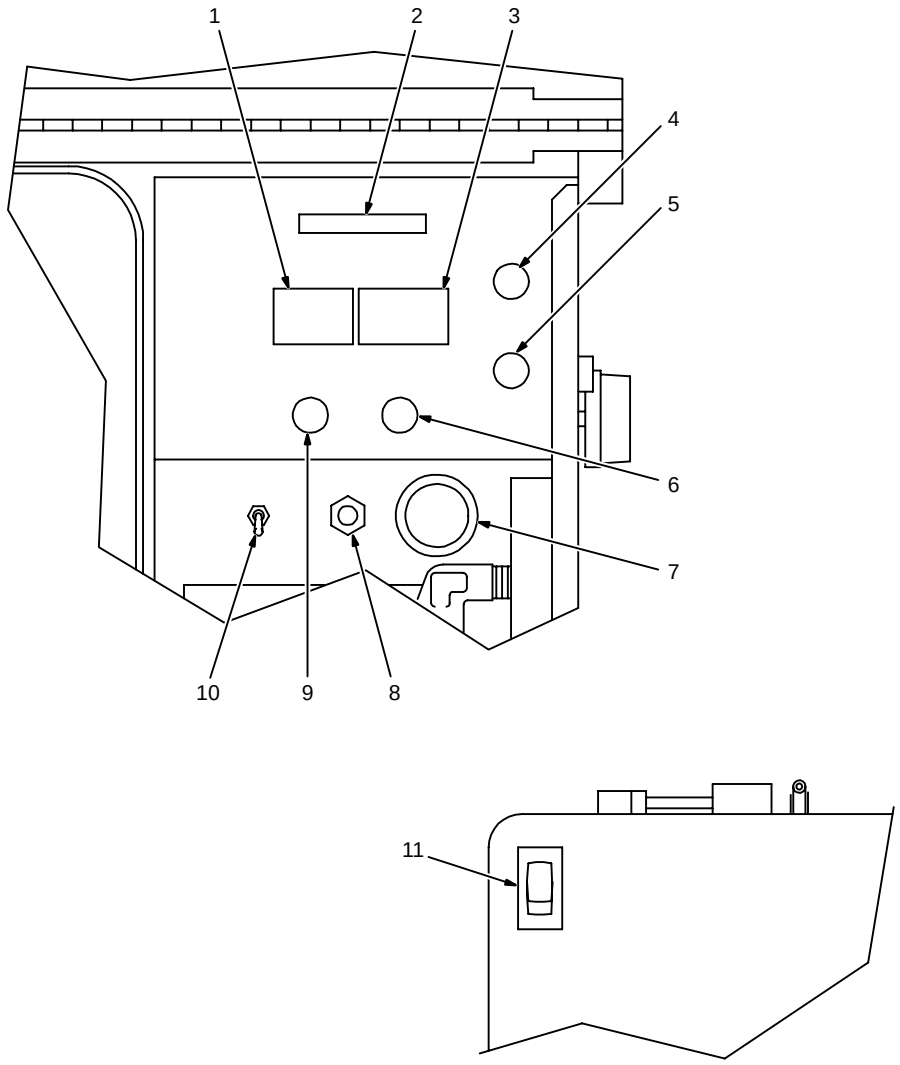
6 Trigger Hold Button And Indicator Light

Trigger Hold can be set on a per program basis. Indicator light comes on for programs where this feature is active.

To weld without holding gun trigger throughout weld cycle, press and release button to turn on indicator light.

To start weld cycle and feed welding wire, press and release gun trigger within the first three seconds after an arc has been struck. If gun trigger is not released within the first three seconds after arc initiation, trigger hold stops, but is still active for next weld cycle. To end weld cycle, press and release gun trigger.

4-4. Side and Rear Panel Controls



1 Mode Display

2 Data Card Slot

3 Parameter Display

4 Parameter Increase Button

5 Parameter Decrease Button

6 Parameter Select Button

Press button to move > in display.

7 Optional Gas Flow Adjustment Knob

Allows accurately presetting gas flow rate on wire feeder front panel digital display.

8 Circuit Breaker CB1

CB1 protects the wire feeder from overload. If CB1 trips, the wire feeder shuts down. Allow a cooling period and manually reset the breaker.

9 Mode Select Button

Press button to move > in display.

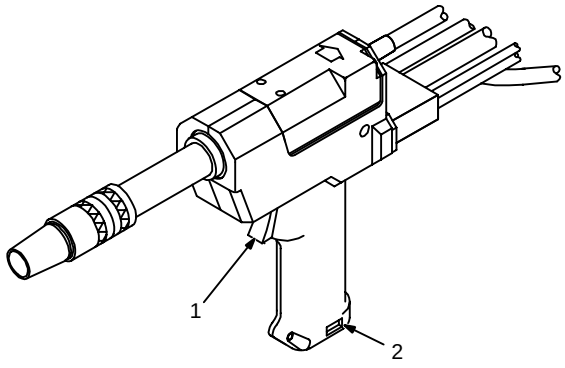
10 Torque Switch (See Section 3-11)

11 Power Switch

Use Power switch to turn wire feeder On and Off.

Ref. 800 690-A / Ref. 800 869

4-5. Gun Controls



1 Trigger

Press trigger to energize welding power source contactor (if applicable), start shielding gas flow, and begin wire feed.

For shielding gas preflow and postflow, partially press trigger before and partially release after welding.

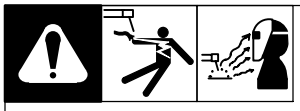
2 Increase/Decrease Switch

Use switch to adjust value of selected parameter. The numbers around the control are for reference only.

Ref. 800 939

SECTION 5 − SETTING SEQUENCE PARAMETERS

5-1. Sequence Parameters in a Program



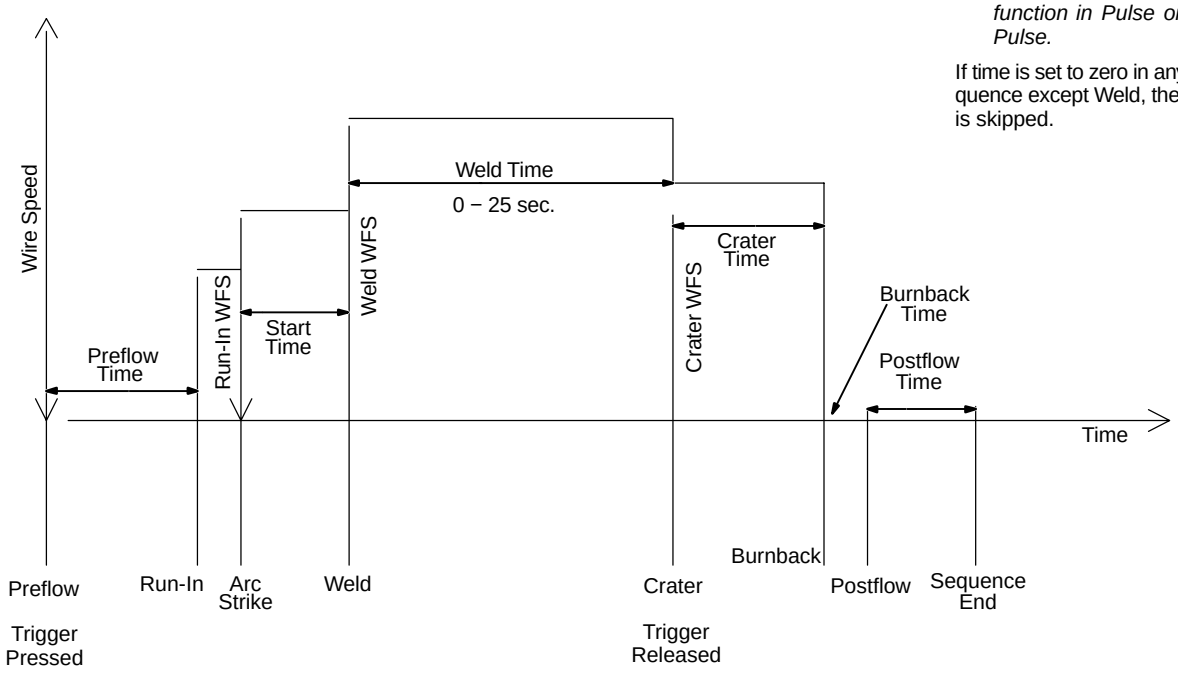
☞ *See Menu Guide for detailed programming steps.*

Trim is arc length. If set to zero, arc length is short. If set to 99, arc length is long.

If time is set to zero in Weld sequence, welding continues until gun trigger is released.

☞ *Crater and Burnback do not function in Pulse or Adaptive Pulse.*

If time is set to zero in any timed sequence except Weld, the sequence is skipped.



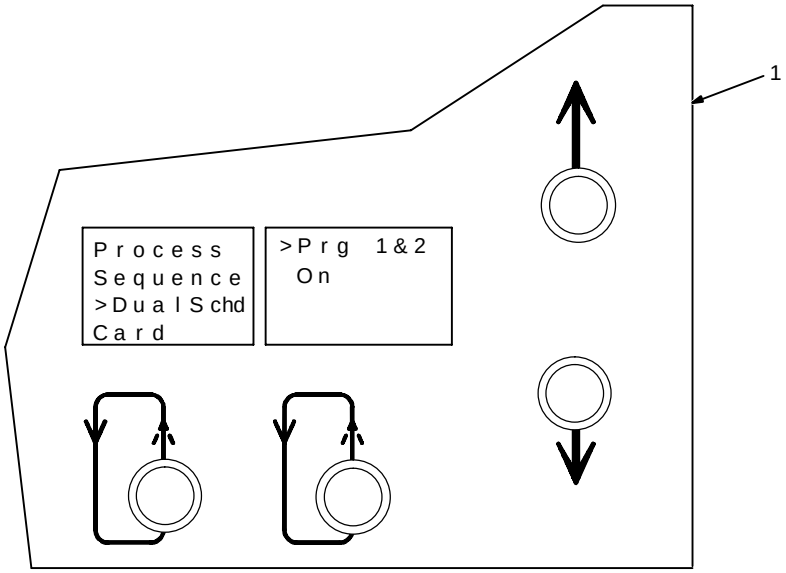
		Trim 0-99	Volts 10.0-38.0	Inductance 0-99%	IPM 50-780	Seconds
1. Weld	Pulse	X			X	0-25.0
	MIG		X	X	X	
2. Crater	Pulse	X			X	0-2.50
	MIG		X		X	
3. Burnback	MIG Only		X			0-0.025
4. & 5. Postflow/ Preflow						0-9.9
6. Run-In	Pulse	X			X	0-2.50
	MIG		X		X	
7. Start	Pulse	X			X	0-5.00
	MIG		X		X	

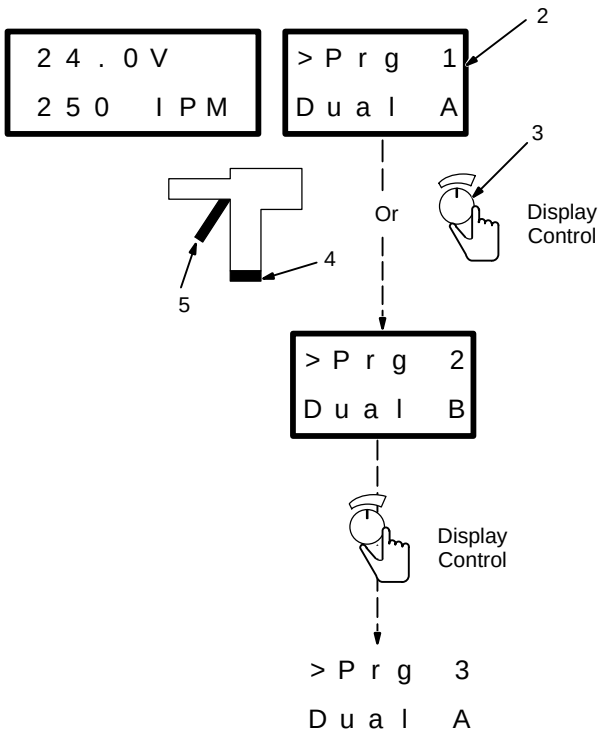
X = Setting available.

SECTION 6 − SETTING DUAL SCHEDULE PARAMETERS

6-1. Selecting Dual Schedule Pair

When dual schedule is On, and Process is selected on the side panel display, then the side panel increase/decrease buttons can be used to change program numbers.





Dual Schedule is used with two consecutive weld programs 1 & 2, 3 & 4, 5 & 6, or 7 & 8. Any program type (MIG, Adaptive Pulse, or Pulse) can be combined in dual schedule.

1 Side Panel Display

Use side panel to turn feature on. See Menu Guide for detailed programming steps.

2 Front Panel Display

Press front panel parameter select button to select program number.

3 Front Panel Display Control

4 Inc/Dec Switch Used As Dual Schedule Switch

5 Welding Gun Trigger

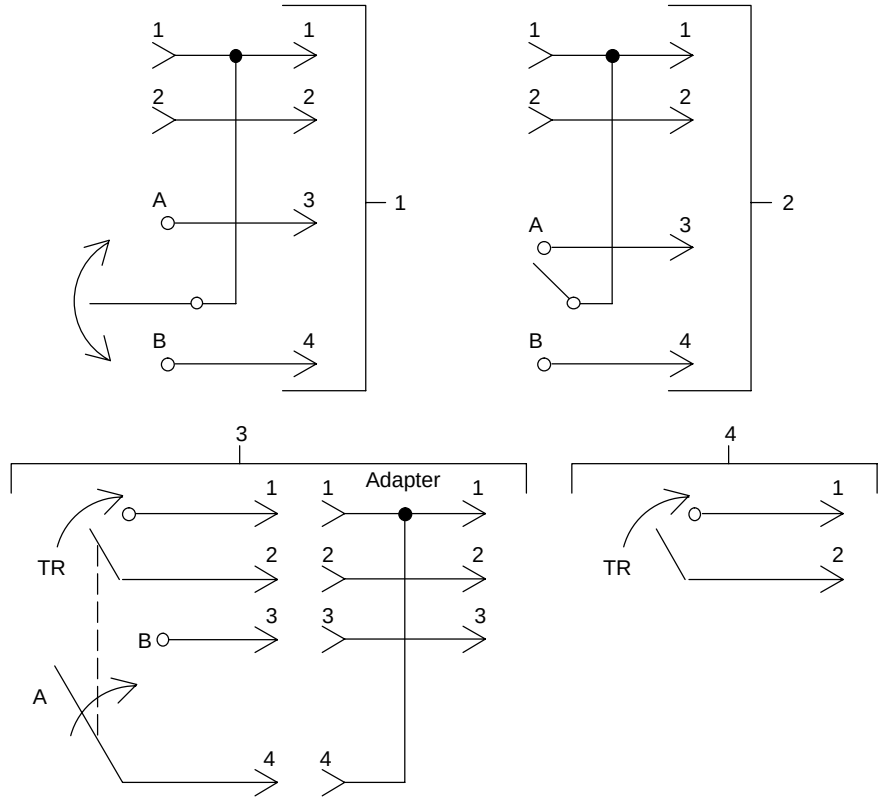
☞ *Switch type is set in System Setup (see Section 6-2).*

Selecting dual schedule program A or B is done by using Display Control, dual schedule switch, or gun trigger (depending on system setup).

When program B is active, turn Display Control one click clockwise to select another pair of dual schedule programs.

☞ *Programs can be rearranged in desired order using the data card. See Menu Guide for detailed programming steps.*

6-2. Dual Schedule Switch Diagrams



1 Momen 2P (Momentary-Contact 2-Pole Switch or DSS-10)

2 Maint 2P (Maintained-Contact 2-Pole Switch)

3 Maint 1P (Maintained-Contact 1-Pole Switch, Or DSS-8)

4 Trigger

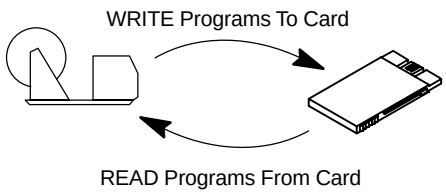
Allows dual scheduling after establishing a welding arc.

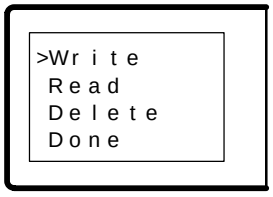
☞ *If trigger is used for dual schedule switch, Trigger Hold is disabled.*

SECTION 7 − USING THE OPTIONAL DATA CARD

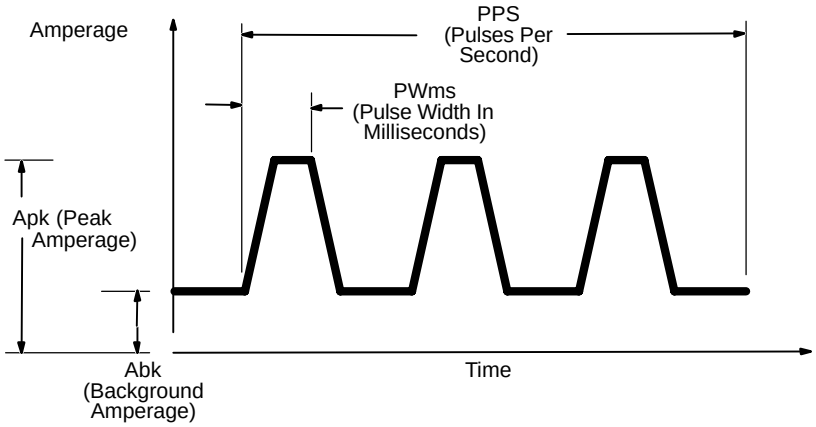
7-1. Data Card Terms

CARD SCREEN TERMS



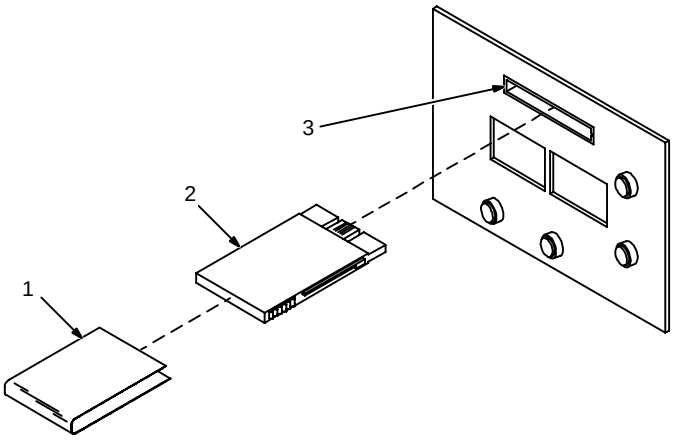


PULSE MIG TERMS



158 435

7-2. Installing Data Card



1 Label

Apply label to data card. Write program information on label.

2 Data Card

3 Card Slot

For Blank Data Card:

Insert card into slot. To format card, turn On power. Select Card from menu. Data card formats when unit enters Card mode.

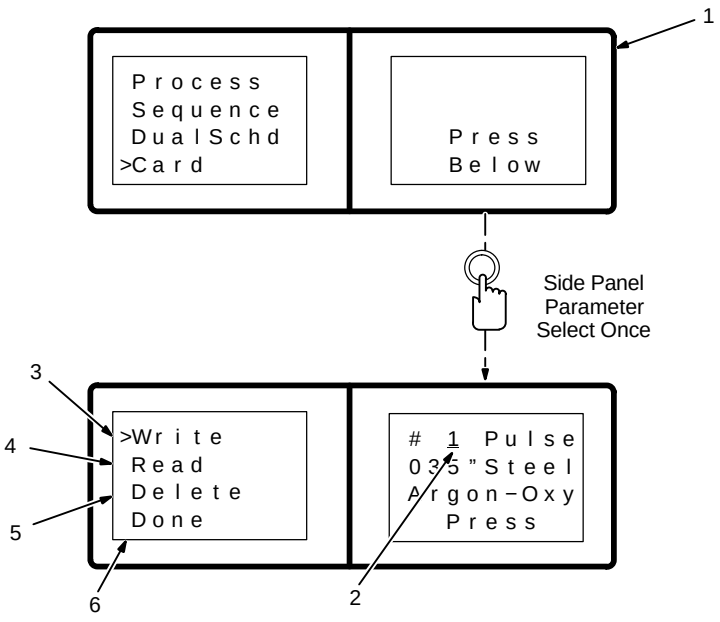
For Power Source Data Card:

Insert card into slot. Turn On power. Push Parameter Select button within 3 seconds and the 8 programs and setup information are read into the wire feeder memory.

Unit is ready to use when “Please Wait” message disappears from front panel display.

156 266-B

7-3. Card Displays



☞ *See Menu Guide for detailed programming steps.*

1 Card Display

2 Moving Line

Moving line is under value that can be changed.

3 Write

Transfers program data from unit to card. The program card can hold up to 32 programs. When writing to the card, the next available program number is automatically assigned.

4 Read

Transfers program data from card to unit.

5 Delete

Deletes program data from card.

6 Done

Exits card display.

SECTION 8 − SYSTEM SETUP

8-1. System Setup Display Parameters

NOTE ☞	*See Menu Guide for detailed programming steps.*

Display Setting	Notes
>System *	Select the process the welding power source is able to do.
>Range *	Welding power source minimum and maximum voltage values are always needed. Amperage values are required for pulse welding. Set values to match welding power source ranges.
>Security♦	With lock on, volts or trim and ipm range of change can be restricted.
>Access♦	When on, restricts use of setup screens.
>Mig Type	Default is Off. Set to On only for older CV welding power source without voltage feedback at 14-socket receptacle.
>Voltage	Default is 14-pin receptacle. Use V. Sense when more than 50 ft (15m) of weld cable is used (including gun cable length).
>Arc Start**	Use Hot Start only with 450 Ampere Inverter Model welding power source and large diameter wires. The arc starts in CV and switches to CC.
>Dual Schedule	See Section 6-2.
>Trigger	When on, trigger can be used to switch between programs that have at least 0.2 seconds of preflow time programmed.
>Remote	When on, a DSS-10 can be used to change Volts or Trim, IPM, or Prg depending on where the front panel display > is.
>Arc Time	Displays accumulated arc time and cycles.
>Self Test	See Section 11-8.
>Wire Feed	Choose to display inches per minute or meters per minute and motor type, but installed motor must match selection.
>Memory	Program Reset: unit defaults to original factory setting for the last active program. Setup information does not change. If setup card is in card slot, program will be loaded from card. System Reset: unit defaults to original factory settings for all programs and setup excluding System, Arc Time, and Model. If setup card is in card slot, program will be loaded from card.
>Shutdown	When on, the system immediately shuts down if no arc voltage is sensed. When off, wire feeds even if no arc voltage is sensed.
>Name	When on, optional data card programs can be named.
>Gas Flow♦♦	Setting must be Meter Off if option is not installed.
>Software	Know this when talking with service personnel.

* Automatically set if power source data card is used.
♦ Can be used only when optional data card is inserted.
** Selection does not appear on display when MIG Only is System choice.
♦♦ Must remain set to Meter Off if option is not installed to prevent system error.

SECTION 9 − STANDARD PULSE WELDING PROGRAMS

NOTE ☞ Apk = Peak Amperage, Abk = Background Amperage, PPS = Pulses Per Second, PWms = Pulse Width (milliseconds).

9-1. Program 1 − Aluminum

Wire Size/Type: .030" ER 4043		Gas: 100% Argon / 15-80 CFH				Gun Model: 30 Ft Water-Cooled
IPM / MPM	**Apk**	**Abk**	**PPS**	**PWms**	**Volts**	**COMMENTS**
875	360	90	234	2.2	28.0	
820	355	87	228	2.1	26.8	
765	347	82	217	2.0	26.2	
710	345	80	215	1.9	25.8	
655	330	75	210	1.8	25.8	
600	315	68	200	1.7	24.0	
545	300	61	190	1.6	23.0	
490	300	60	180	1.5	22.0	
435	290	54	158	1.4	24.6	
380	275	49	146	1.3	24.6	
325	265	43	136	1.2	20.7	
270	255	37	135	1.1	17.8	
215	245	31	117	1.1	16.6	
160	230	27	71	1.1	17.6	
105	230	19	30	1.0	20.2	

9-2. Program 2 − Aluminum

Wire Size/Type: .035" ER 4043		Gas: 100% Argon / 20-40 CFH				Gun Model: 30 Ft Water-Cooled
IPM / MPM	**Apk**	**Abk**	**PPS**	**PWms**	**Volts**	**COMMENTS**
875	385	162	230	2.2	28.4	
820	380	156	220	2.1	28.0	
765	375	150	210	2.0	26.8	
710	367	144	200	1.9	26.8	
655	365	140	190	1.8	26.8	
600	355	130	178	1.7	26.6	
545	345	118	160	1.6	26.0	
490	330	108	145	1.5	25.1	
435	314	90	143	1.4	23.8	
380	294	75	140	1.3	23.3	
325	285	60	135	1.2	25.1	
270	280	43	137	1.2	19.6	
215	270	42	116	1.1	17.9	
160	250	35	77	1.1	18.6	
105	250	25	35	1.1	18.4	

9-3. Program 3 − Aluminum

Wire Size/Type: 3/64” ER 4043		Gas: 100% Argon / 20-Max CFH				Gun Model: 30 Ft Water-Cooled
IPM / MPM	**Apk**	**Abk**	**PPS**	**PWms**	**Volts**	**COMMENTS**
875	500	195	270	3.0	30.5	
820	480	185	270	3.0	29.4	
765	460	175	270	3.0	29.0	
710	440	160	260	2.8	28.5	
655	420	150	255	2.7	27.8	
600	400	140	250	2.6	27.3	
545	380	130	239	2.5	26.7	
490	360	128	211	2.4	24.5	
435	325	115	205	2.3	23.9	
380	320	113	185	2.2	22.9	
325	297	104	157	2.2	22.3	
270	288	57	170	2.1	22.0	
215	265	45	155	2.1	21.8	
160	210	54	90	2.0	19.6	
105	240	33	63	1.9	20.3	

9-4. Program 4 − Aluminum

Wire Size/Type: 1/16” ER 4043		Gas: 100% Argon / 20-Max CFH				Gun Model: 30 Ft Water-Cooled
IPM / MPM	**Apk**	**Abk**	**PPS**	**PWms**	**Volts**	**COMMENTS**
820	565	255	294	2.7	32.0	
765	565	255	294	2.7	32.0	
710	565	255	294	2.7	32.0	
655	565	255	294	2.7	32.0	
600	558	255	290	2.7	31.9	
545	540	255	275	2.6	31.5	
490	520	255	250	2.5	31.0	
435	495	245	230	2.4	28.0	
380	470	199	230	2.2	29.5	
325	435	145	230	2.0	25.4	
270	385	125	218	1.8	24.4	
215	370	122	167	1.7	23.4	
160	340	88	120	1.6	22.9	
105	335	49	89	1.5	20.1	
75	330	25	70	1.5	22.0	

9-5. Program 5 − Aluminum

Wire Size/Type: .030” ER 5356		Gas: 100% Argon / 20-40 CFH				Gun Model: 30 Ft Water-Cooled
IPM / MPM	**Apk**	**Abk**	**PPS**	**PWms**	**Volts**	**COMMENTS**
875	340	78	144	2.4	25.0	
820	335	73	140	2.3	24.4	
765	330	70	138	2.2	24.1	
710	325	67	133	2.1	23.3	
655	320	62	128	2.0	23.1	
600	310	59	123	1.9	23.2	
545	300	55	117	1.8	23.2	
490	290	50	110	1.7	24.0	
435	285	45	97	1.6	21.4	
380	280	40	91	1.5	22.1	
325	275	37	78	1.4	24.9	
270	272	36	60	1.3	21.4	
215	270	28	50	1.3	20.2	
160	270	21	41	1.3	18.3	
105	283	18	28	1.2	17.3	

9-6. Program 6 − Aluminum

Wire Size/Type: .035” ER 5356		Gas: 100% Argon / 20-45 CFH				Gun Model: 30 Ft Water-Cooled
IPM / MPM	**Apk**	**Abk**	**PPS**	**PWms**	**Volts**	**COMMENTS**
875	350	122	180	2.5	26.0	
820	345	115	175	2.4	25.7	
765	340	107	170	2.3	25.7	
710	330	101	165	2.2	25.0	
655	320	97	158	2.1	25.8	
600	310	86	145	2.0	23.7	
545	300	79	132	1.9	23.1	
490	290	72	122	1.8	23.7	
435	285	66	115	1.7	24.7	
380	280	62	96	1.6	23.5	
325	278	54	89	1.5	20.5	
270	276	41	85	1.4	23.7	
215	274	33	73	1.3	24.0	
160	272	29	50	1.2	17.8	
105	270	22	34	1.1	18.2	

9-7. Program 7 − Aluminum

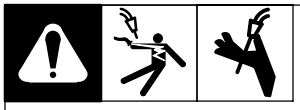
Wire Size/Type: 3/64” ER 5356	Gas: 100% Argon / 20-Max CFH					Gun Model: 30 Ft Water-Cooled
IPM / MPM	**Apk**	**Abk**	**PPS**	**PWms**	**Volts**	**COMMENTS**
875	485	140	250	3.0	31.5	
820	470	135	240	2.9	30.9	
765	450	117	235	2.8	29.0	
710	433	107	230	2.7	27.6	
655	410	100	220	2.6	26.4	
600	395	89	207	2.5	25.6	
545	380	84	197	2.5	25.5	
490	357	80	186	2.4	24.6	
435	340	76	177	2.3	24.9	
380	330	68	165	2.2	24.4	
325	320	59	151	2.1	23.5	
270	318	41	136	2.0	22.6	
215	310	34	112	1.8	21.2	
160	305	27	83	1.7	19.6	
105	300	25	45	1.6	22.2	

9-8. Program 8 – Aluminum

Wire Size/Type: 1/16” ER 5356	Gas: 100% Argon / 20-Max CFH					Gun Model: 30 Ft Water-Cooled
IPM / MPM	**Apk**	**Abk**	**PPS**	**PWms**	**Volts**	**COMMENTS**
820	565	255	294	2.7	33.0	
765	565	255	294	2.7	33.0	
710	565	255	294	2.7	33.0	
655	545	255	294	2.7	33.0	
600	515	255	280	2.6	31.0	
545	480	255	224	2.5	29.1	
490	460	255	190	2.3	27.4	
435	430	230	185	2.1	25.5	
380	422	200	175	2.0	22.3	
325	412	160	165	1.9	23.7	
270	400	128	145	1.8	24.3	
215	385	100	112	1.7	21.8	
160	385	73	80	1.6	22.9	
105	363	39	63	1.5	19.4	
75	350	20	60	1.4	19.9	

SECTION 10 − TEACH POINTS

10-1. Teach Points Explained



See GMAW-P (Pulsed MIG) Process Guide (MILLER Part No. 158 920) supplied with unit for more information.

The teach mode allows the user to create custom pulse programs. The teach mode has 15 teach points. At each teach point, the user can adjust five parameters to shape the pulse waveform of the weld output. The five parameters are: IPM (MPM), Apk, Abk, PPS, and PWms.

Apk, Abk, PPS, and PWms acting together provide the energy necessary to burn off welding wire at a set wire feed speed. The graph below shows that as wire feed speed increases, energy increases (Apk, Abk, PPS, and PWms acting synergically).

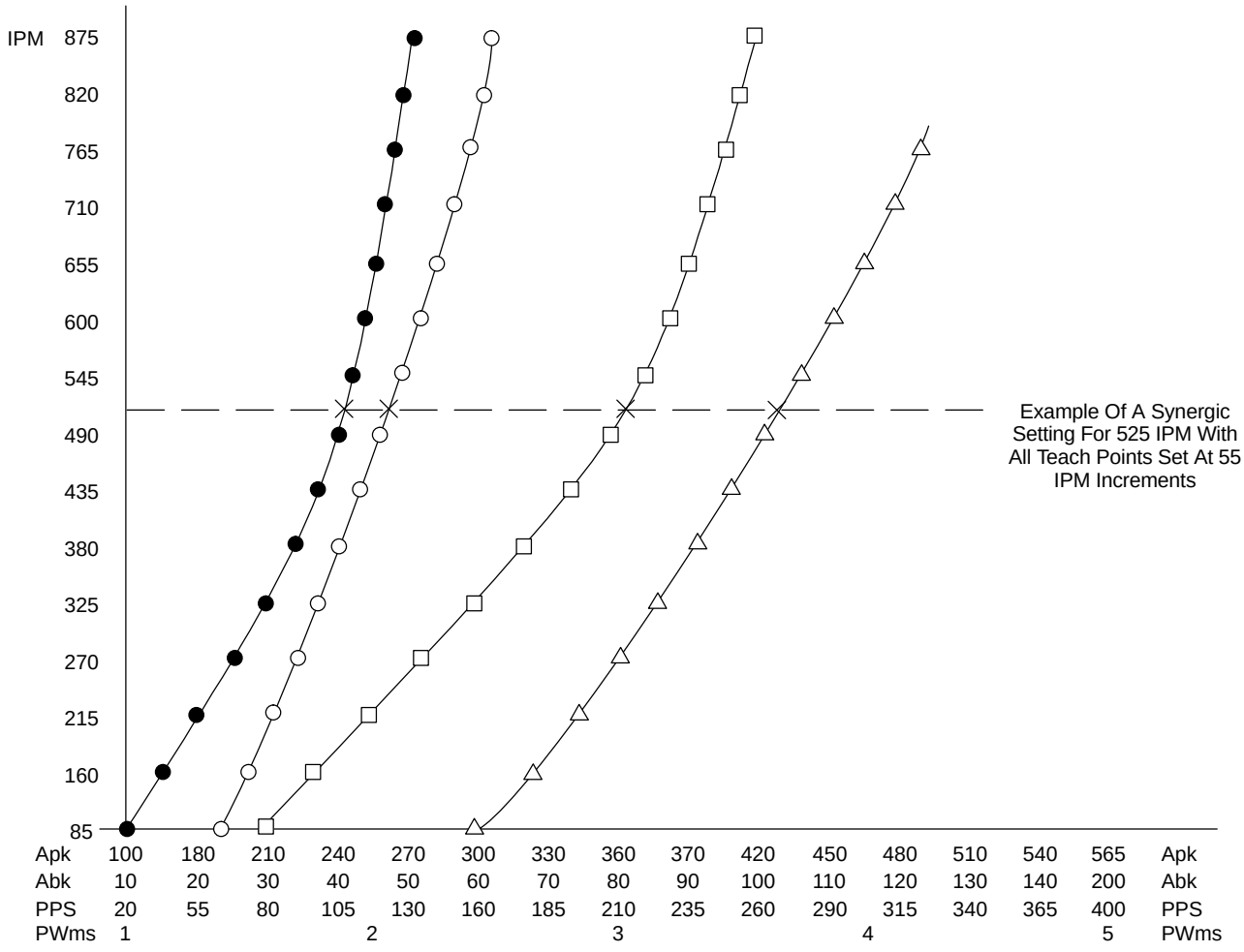
Under some conditions, the wire feeder limits wire feed speed to maintain all pulse parameters within the capability of the system.

△ Apk = Peak Amperage

□ Abk = Background Amperage

○ PPS = Pulses Per Second

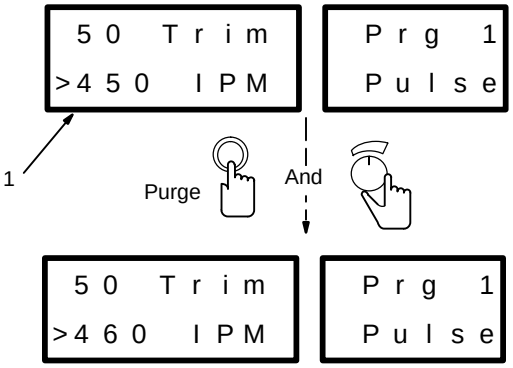
● PWms = Pulse Width (Milliseconds)



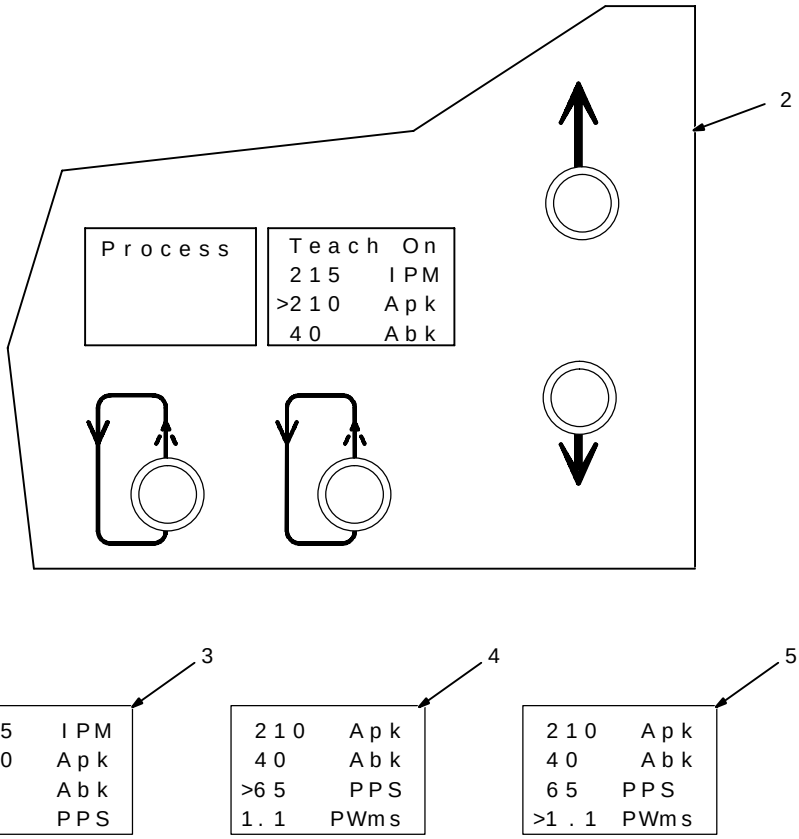
10-2. Redefining Teach Points

Redefining IPM Teach Point

Redefining IPM is not normally required unless special wire or unusual joint design is needed.



Redefining Pulse Parameters



1 IPM

IPM determines the weld metal deposition rate.

Redefining IPM is not normally required unless special wire or unusual joint design is needed.

Use front panel parameter select button to move > to select IPM. Use Display Control to select teach point value.

Press and hold Purge button while turning Display Control to redefine the ipm teach point. For example: there are teach points at 215, 270, and 325 ipm; the teach point at 270 can be adjusted to a wire feed speed of 216 to 324 ipm.

2 Apk − Peak Amperage

3 Abk − Background Amperage

Peak and background amperage depend on the range of the welding power source.

4 PPS − Pulses Per Second Of 20-400

5 PWms − Pulse Width Of 1.0-5.0 Milliseconds

Use side panel controls to change pulse parameters. See Menu Guide for detailed programming steps.

After values are set, strike and maintain an arc for five seconds. Do this for each teach point.

End weld by releasing gun trigger, not by pulling gun out of weld. Repeat for each custom teach point.

The taught arc length represents a Trim (arc length) setting of 50.

Once the teach points are set, the wire feeder adjusts parameters between teach points synergically.

Ref. S-0259 / Ref. 154 109

Date_____ **Program Number**_____ **Wire Size/Type**_____

Gas_____ **Flowrate**_____**CFH(L/min)**

Equipment Used − Power Source_____ **Serial Number**_____

Wire Feeder_____ **Serial Number**_____

Gun Model_____ **Weld Cable − Negative**_____ **Positive**_____

Wire Manufacturer_____ **Mfg. Date**_____

IPM / MPM	Apk	Abk	PPS	PWms	Vpk	COMMENTS

Preflow Seconds:_____

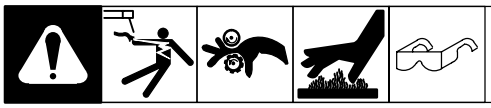
Run-In Trim/Volts:_____ **IPM / MPM:**_____ **Seconds:**_____

Crater Volts:_____ **IPM / MPM:**_____ **Seconds:**_____

Postflow Seconds:_____

SECTION 11 − MAINTENANCE AND TROUBLESHOOTING

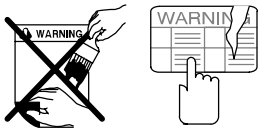
11-1. Routine Maintenance



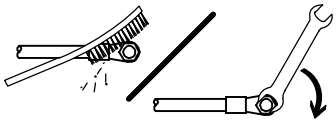
▲ **Disconnect power before maintaining.**

3 Months

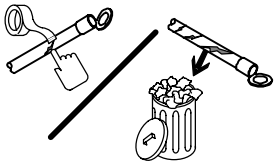
Replace Unreadable Labels



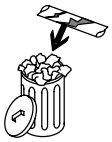
Clean And Tighten Weld Terminals



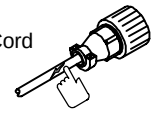
Repair Or Replace Cracked Weld Cable



Replace Cracked Parts

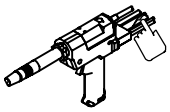


14-Pin Cord



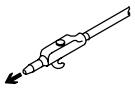
Gas Hose And Fittings

Gun Cable

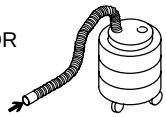


6 Months

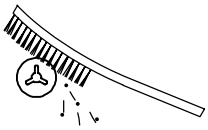
Blow Out Or Vacuum Inside. During Heavy Service, Clean Monthly



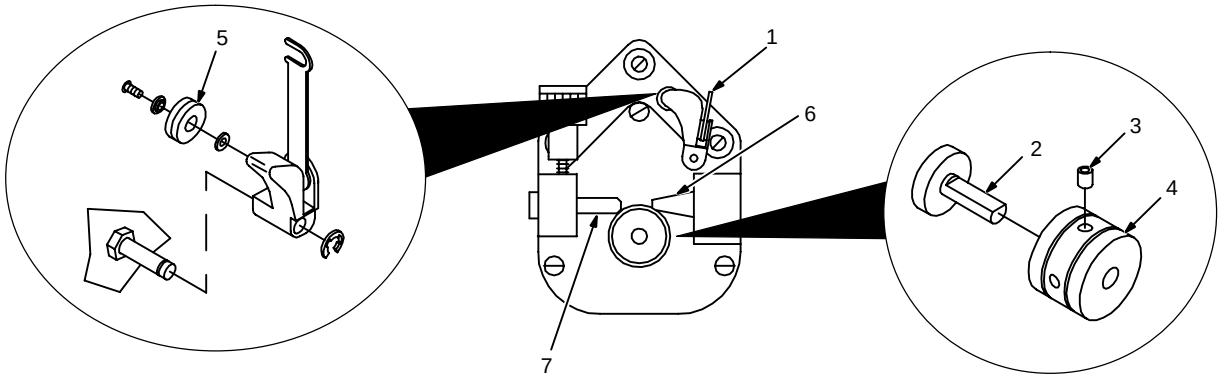
OR



Clean Drive Rolls



11-2. Feeder Drive Assembly Maintenance



Ref. 800 944 / 151 781 / Ref. 151 781

Retract wire onto spool.

1 Pressure Roll Assembly

2 Drive Motor Shaft

3 Setscrew

4 Drive Roll

☞ *Number size of desired drive roll groove, located on side of drive roll closest to groove, must face inside toward shaft when reinstalling drive roll.*

Use wire brush to clean drive roll. Install drive roll with desired groove in, and turn drive roll so one setscrew faces flat side of shaft.

5 Bearing

Use wire brush to clean bearing.

6 Wire Conduit Fitting

Line up drive roll groove with bearing groove and opening in conduit fitting. Tighten set-screws.

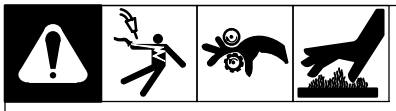
7 Wire Inlet Guide

Pull guide toward rear of feeder to remove. Install new guide.

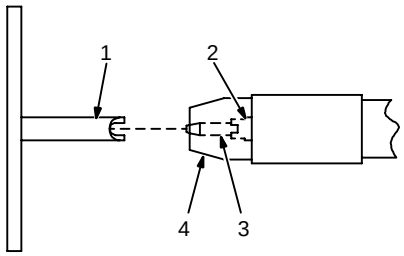
Thread welding wire and adjust drive roll pressure, if necessary (see Sections 3-13 and 3-14).

Tools Needed:

11-3. Changing Gun Contact Tip and Liner



Tools Needed:



150 437

Remove top cover and open pressure roll assembly.

1 Contact Tip Wrench

Insert wrench into nozzle over contact tip.

2 Compression Nut

Loosen nut. Pull out contact tip.

3 Contact Tip

4 Nozzle

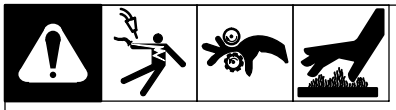
Pull wire out nozzle and liner should slide out. If necessary, tilt nozzle down to remove liner.

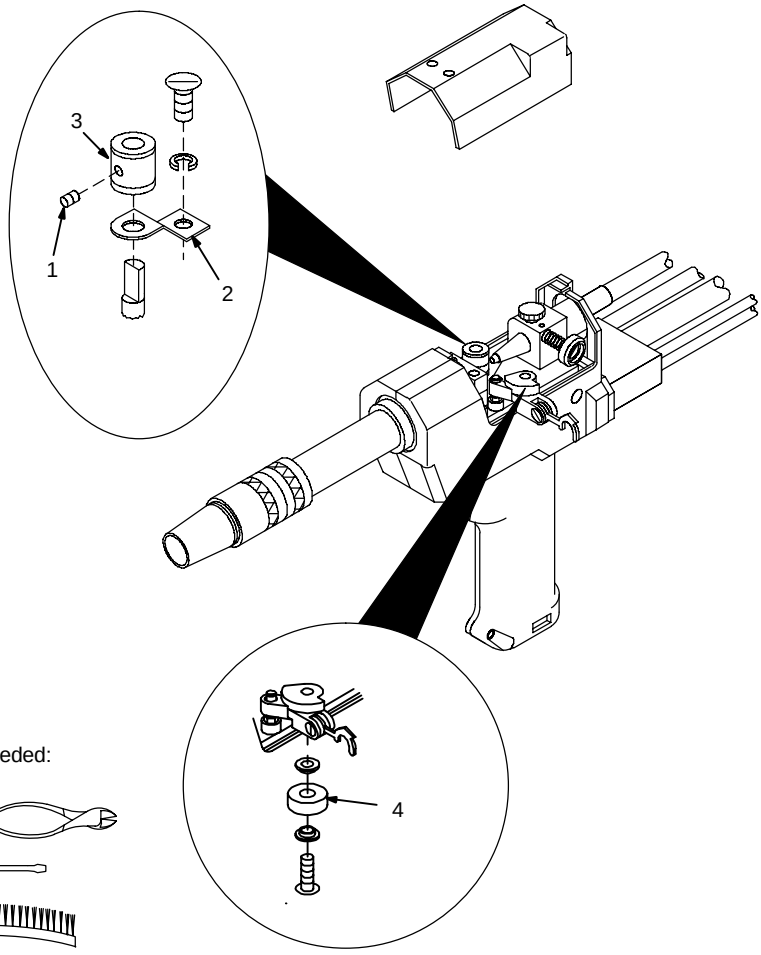
Close pressure roll assembly. Reinstall top cover.

Install new liner and contact tip over wire. Cut off wire at end of contact tip.

Tighten nut just until contact tip is secure. Overtightening nut will damage adapter.

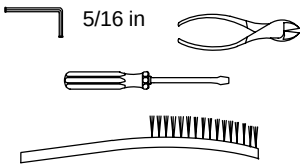
11-4. Gun Drive Assembly Maintenance





Tools Needed:

5/16 in



Retract wire onto spool.

1 Setscrew

2 Current Pick-Up Tab

This tab helps prevent burnback caused by welding arcs inside the contact tip. This tab may be removed to provide an insulated drive roll. (If tab is removed, a smaller diameter contact tip is recommended. See options in Parts List.) Lightly grease top of tab before reinstalling.

3 Drive Roll

Use wire brush to clean drive roll. Install drive roll with desired groove down, and turn drive roll so one setscrew faces flat side of shaft.

4 Bearing

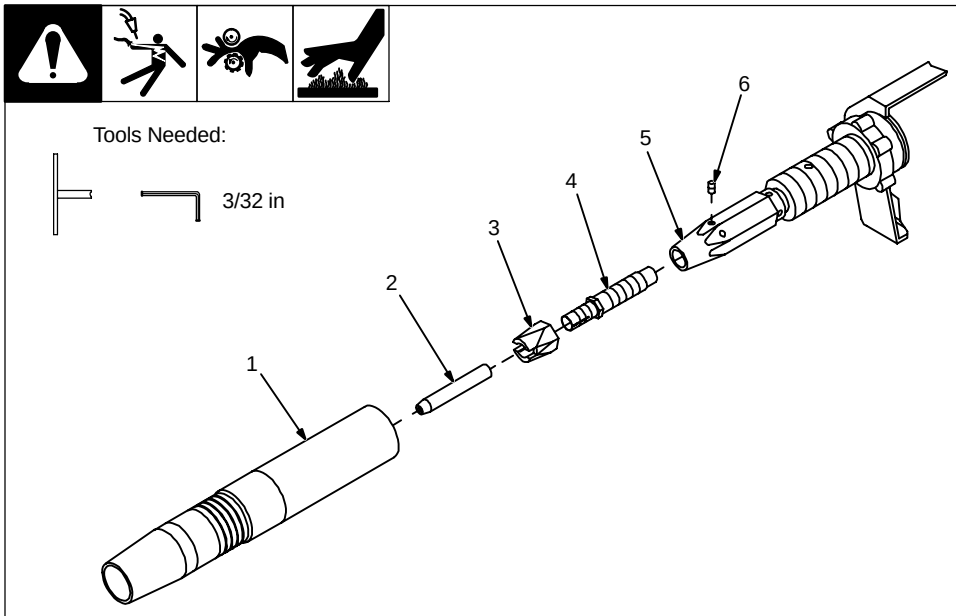
Use wire brush to clean bearing. Line up drive roll groove with bearing groove and liner opening. Tighten setscrews.

If changing drive roll in feeder, see Section 11-2.

Thread welding wire through gun. Close and secure pressure roll assembly. Adjust drive roll pressure, if necessary (see Sections 3-13 and 3-14). Reinstall top cover.

Ref. 800 945-A

11-5. Removing Air-Cooled Contact Tip Adapter



Tools Needed:

3/32 in

1 Barrel Extension

Remove as shown.

2 Contact Tip

3 Compression Nut

To remove, see Section 11-3.

4 Contact Tip Adapter

5 Head Tube

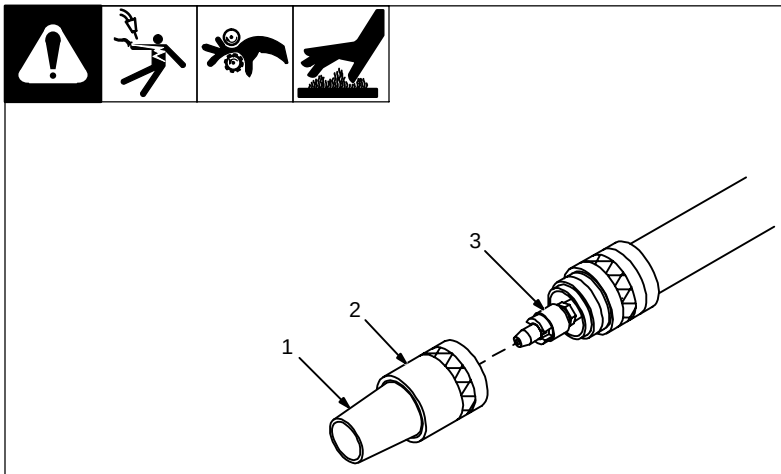
6 Head Tube Setscrew

Loosen setscrews and remove adapter.

Install new adapter and tighten setscrews. Reinstall contact tip, compression nut, and nozzle.

150 430-A

11-6. Removing Water-Cooled Contact Tip Adapter



Tools Needed:

3/32 in

▲ **Point gun downward when removing water-cooled barrel to keep water out of gun. Wipe gun dry before putting it back together.**

1 Nozzle

2 Nozzle Adapter

Remove as shown.

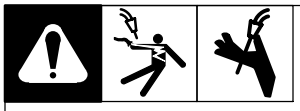
3 Contact Tip Adapter

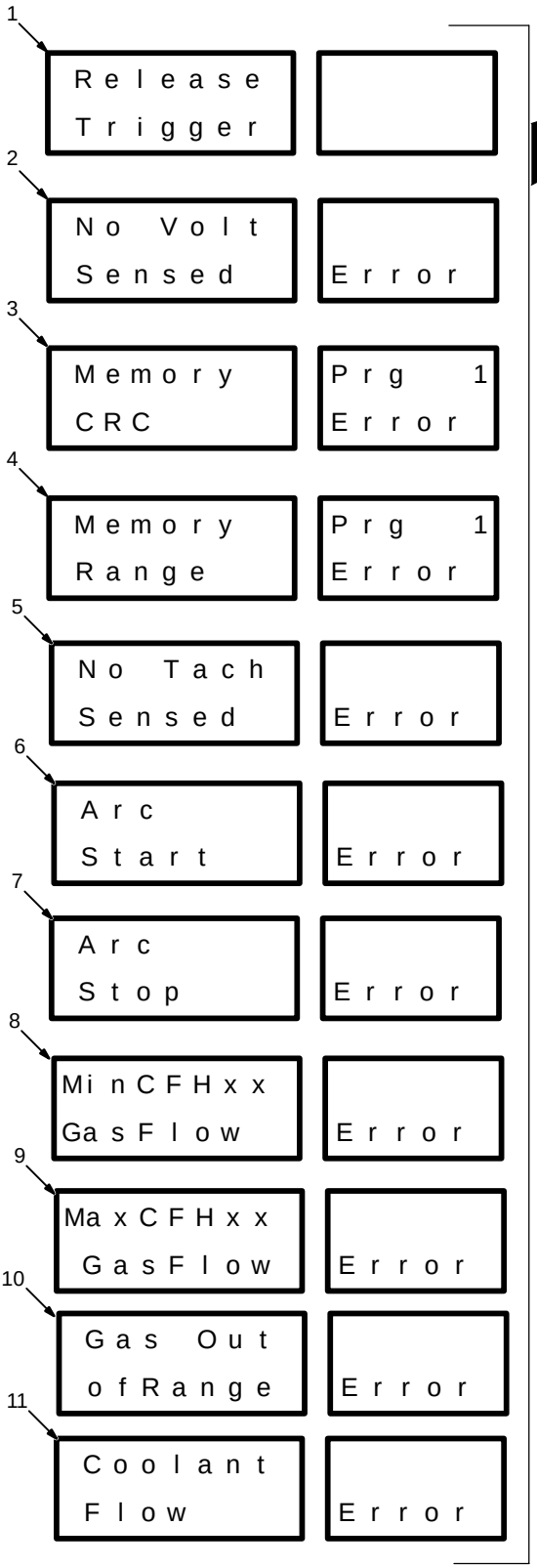
Use wrench to remove adapter.

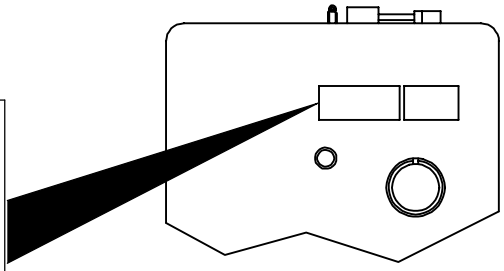
Coat new adapter with threadlocking compound (such as Loctite No. 242), and install.

150 431

11-7. Error Displays







1 Release Trigger Error Display

This appears if the trigger is closed when the unit power is turned on, or if the trigger is stuck or defective.

2 No Volt Sensed Error Display

The arc voltage sense circuit is not receiving feedback. Check voltage sensing connections. Check connections at 17-position plugs/receptacles at the unit and welding power source.

Turn unit off and back on after correcting problem.

If this error continues to occur when pulse welding, it may help to select Hot Start.

3 Memory CRC Error Display

The data in the program indicated is not the same data that was saved.

Perform a system reset.

4 Memory Range Error Display

The data in the program indicated is out of usable range.

Go through pulse parameters to make sure they do not exceed settings of the Range display or perform a system reset.

5 No Tach Sensed Error Display

The motor tach feedback is not reaching the control. Check connections.

Press front panel Parameter Select to clear error.

6 Arc Start Error Display

This appears when pulse welding and current is detected but the arc cannot be started. Check and correct program pulse parameters and voltage settings. Check voltage sensing connections.

Press front panel Parameter Select to clear error.

7 Arc Stop Error Display

This appears when pulse welding and the motor does not stop at the end of the weld. If there is high frequency being used in the area, turn it off. A motor brake circuit problem can also cause this error.

Press front panel Parameter Select to clear error.

8 Minimum Gas Flow Error

This appears when gas flow falls below the minimum CFH set (xx in example). Adjust gas flow to bring it above set value.

Press front panel Parameter Select to clear error.

9 Maximum Gas Flow Error

This appears when gas flow is above the maximum CFH set (xx in example). Adjust gas flow to bring it below set value.

Press front panel Parameter Select to clear error.

10 Gas Out Of Range Error

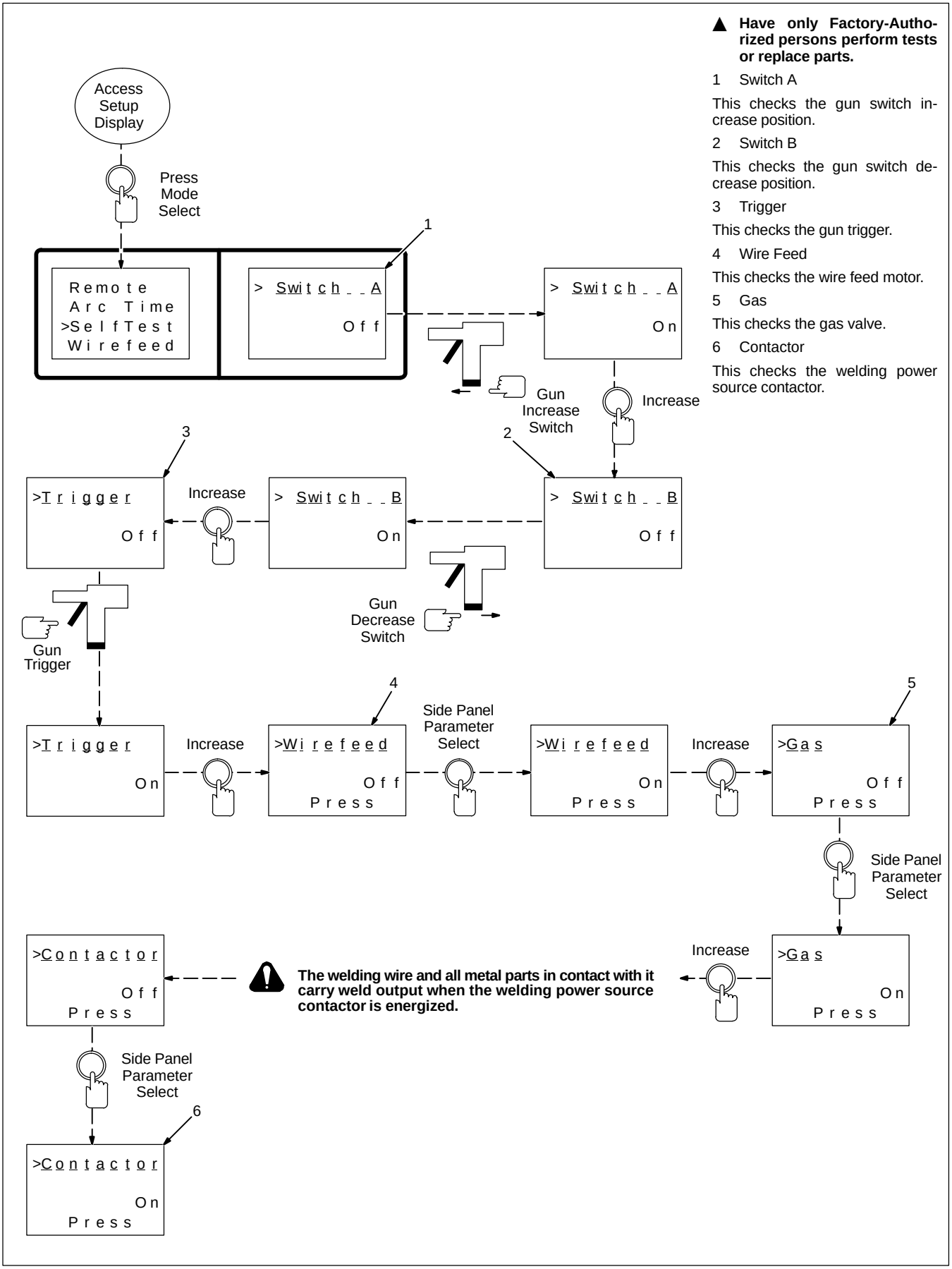
This appears when gas flow is greater than 100 CFH. To protect the internal sensor, the unit shuts down until the gas flow can be adjusted below 100 CFH.

11 Coolant Flow Error

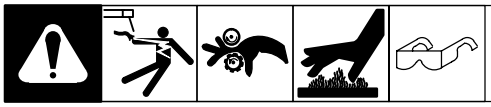
This appears when coolant flow is interrupted. Check coolant flow and coolant supply before continuing operation.

Ref. 800 687-A

11-8. Using Self Test



11-9. Troubleshooting



▲ **Disconnect power before troubleshooting.**

Trouble	Remedy
Pressing gun trigger does not energize feeder. Welding wire is not energized. Shielding gas does not flow.	Secure plug from gun control cable into Gun Control receptacle on feeder (see Section 3-8).
	Have nearest Factory Authorized Service Agent check optional water flow switch, if applicable.
Wire feeds, shielding gas flows, but welding wire is not energized.	See Troubleshooting section in welding power source manual.
Wire feeds erratically.	Check position of Motor Torque switch (see Section 3-11).
	Adjust drive roll pressure if necessary (see Sections 3-13 and 3-14).
	Replace or clean drive rolls as necessary (see Sections 11-2 and 11-4).
	Align drive roll with opening in gun conduit fitting and groove in bearing (see Section 11-4).
Arc varies and welding wire is kinked when feeding out gun.	Place Motor Torque switch in low torque position if welding with .030 (0.8 mm) aluminum welding wire (see Section 3-11).
No weld output; gun/feeder does not work.	Check gun trigger plug connection on wire feeder front panel (see Section 3-8).
	Place Power switch on welding power source in the On position.
	Place Power switch on the wire feeder in the On position (see Section 4-4).
Erratic weld output.	Tighten and clean all connections.
	Check drive roll pressure in wire feeder and gun (see Sections 3-13 and 3-14).
	Check and replace liner if necessary (see Section 11-3).
Pressing gun/feeder trigger does not energize weld control; welding wire is not energized; shielding gas does not flow.	Check gun trigger plug connection on wire feeder front panel (see Section 3-8).
Wire does not feed; burnback in contact tip.	Check drive roll pressure in wire feeder and gun (see Sections 3-13 and 3-14).
	Check and replace liner if necessary (see Section 11-3).
	Reinstall voltage sensing lead (see Sections 3-2 and 3-3).
Wire feeds, shielding gas flows, but welding wire is not energized.	See Troubleshooting section in welding power source Owner's Manual.
Wire feeds erratically.	Check drive roll pressure in wire feeder and gun (see Sections 3-13 and 3-14).
	Clean or replace drive roll in gun and wire feeder (see Sections 11-2 and 11-4).
	Check and replace liner if necessary (see Section 11-3).
Gun overheating (water-cooled models).	Be sure coolant flowrate is at least 1 qt/min.
	Corrosion buildup in gun decreasing coolant flowrate. Backflush coolant system, clean coolant system filter, and clean fittings.

Notes

SECTION 12 − ELECTRICAL DIAGRAM

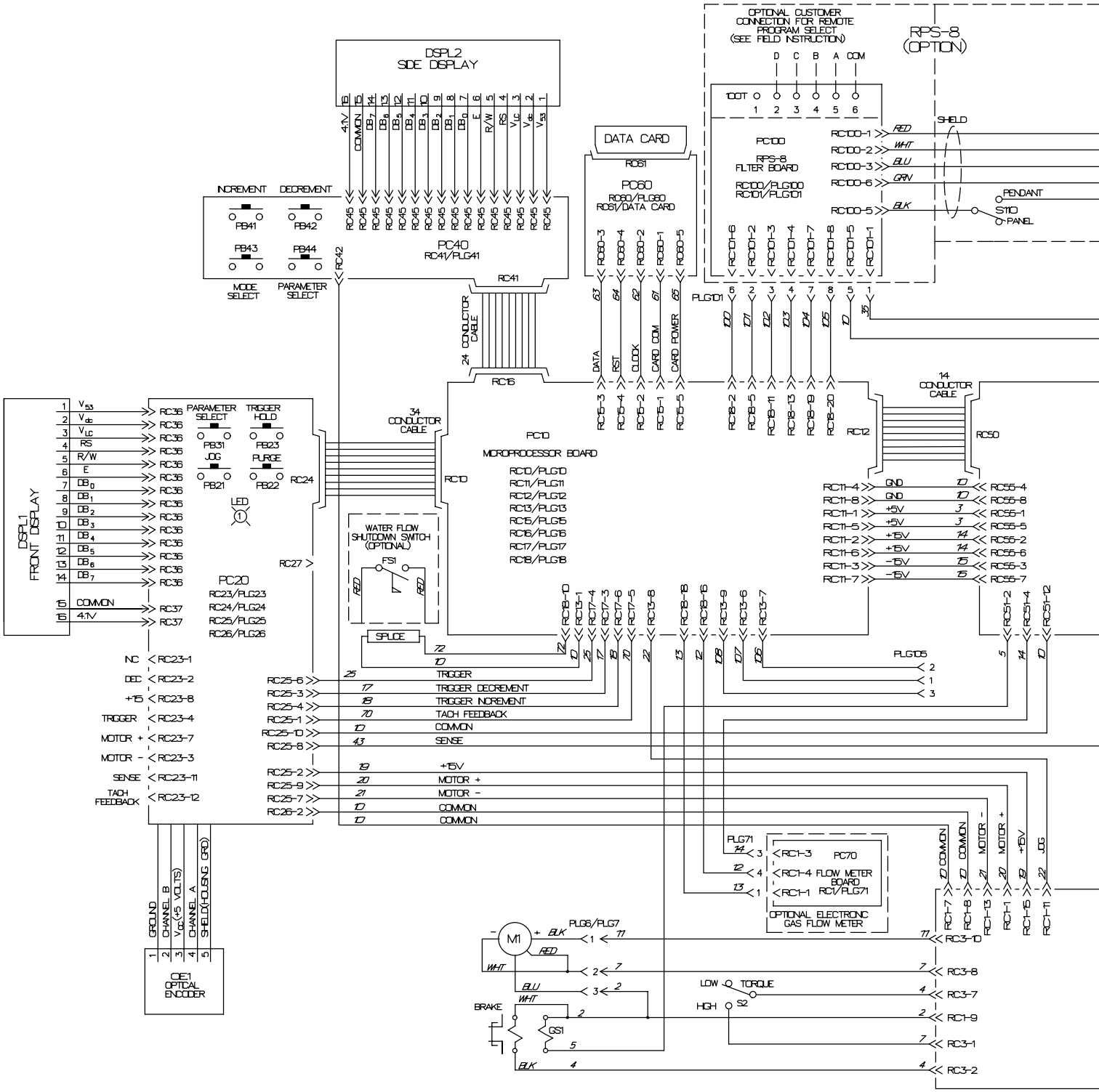
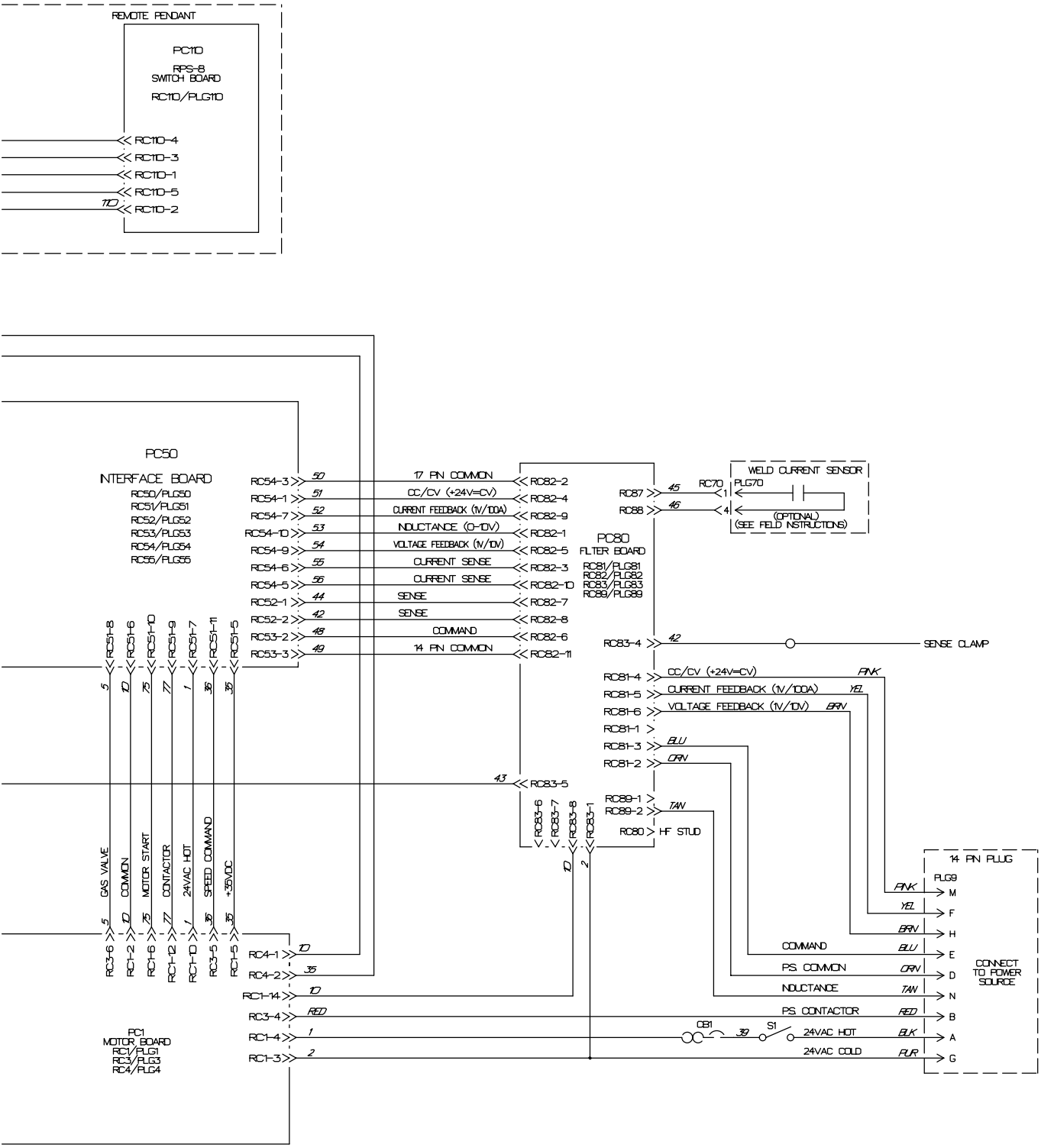
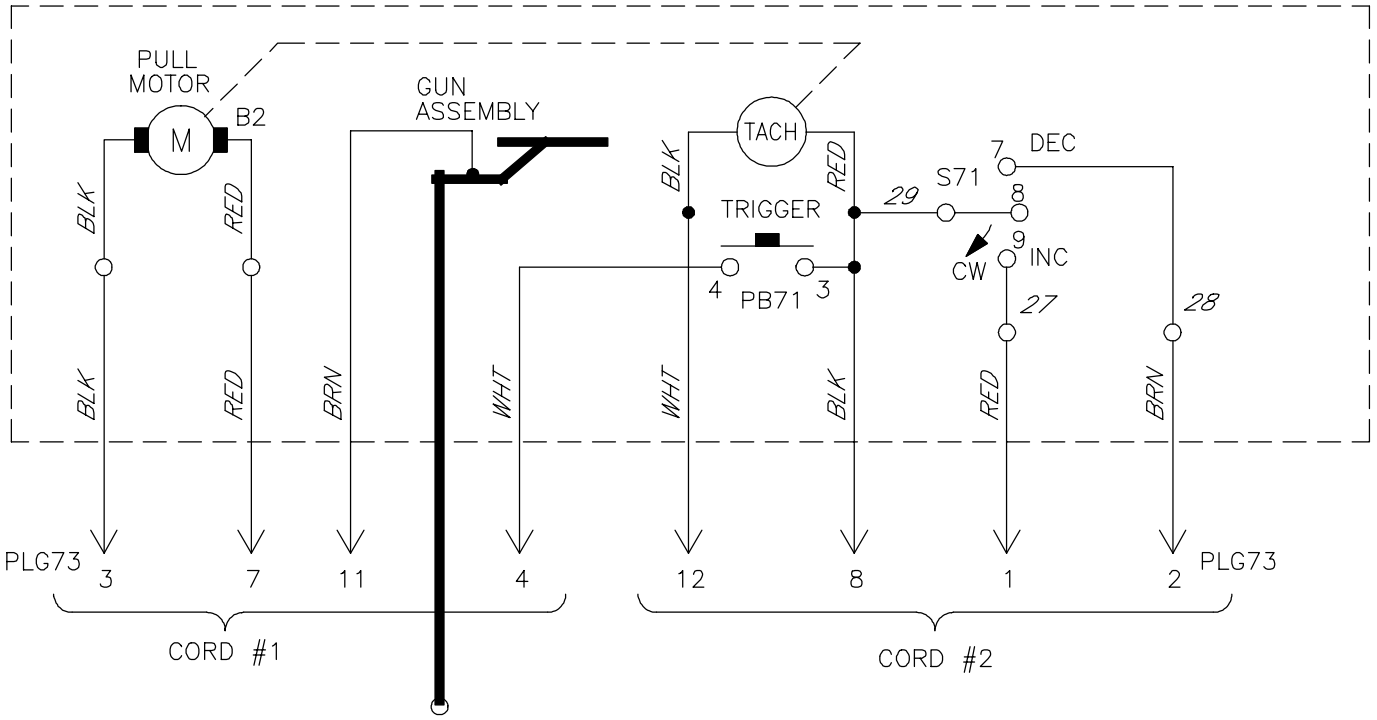


Figure 12-1. Circuit Diagram


REMOTE PENDANT
PC11D
RPS-8
SWITCH BOARD
RC11D/PLG11D
RC11D-4
RC11D-3
RC11D-1
RC11D-5
11D
RC11D-2
PC50
INTERFACE BOARD
RC50/PLG50
RC51/PLG51
RC52/PLG52
RC53/PLG53
RC54/PLG54
RC55/PLG55
RC54-3
RC54-1
RC54-7
RC54-10
RC54-9
RC54-6
RC54-5
RC52-1
RC52-2
RC53-2
RC53-3
50
51
52
53
54
55
56
44
42
48
49
17 PIN COMMON
CC/CV (+24V=CV)
CURRENT FEEDBACK (1V/100A)
INDUCTANCE (0-10V)
VOLTAGE FEEDBACK (1V/10V)
CURRENT SENSE
CURRENT SENSE
SENSE
SENSE
COMMAND
14 PIN COMMON
RC82-2
RC82-4
RC82-9
RC82-1
RC82-5
RC82-3
RC82-10
RC82-7
RC82-8
RC82-6
RC82-11
PC80
FILTER BOARD
RC81/PLG81
RC82/PLG82
RC83/PLG83
RC89/PLG89
RC87
RC88
45
46
RC70
PLG70
1
4
WELD CURRENT SENSOR
(OPTIONAL)
(SEE FIELD INSTRUCTIONS)
RC83-4
42
SENSE CLAMP
RC81-4
RC81-5
RC81-6
RC81-1
RC81-3
RC81-2
CC/CV (+24V=CV)
CURRENT FEEDBACK (1V/100A)
VOLTAGE FEEDBACK (1V/10V)
PNK
YEL
BRN
BLU
ORN
43
RC83-5
RC89-1
RC89-2
TAN
RC80
HF STUD
RC83-6
RC83-7
RC83-8
RC83-1
10
2
RC51-8
RC51-6
RC51-10
RC51-9
RC51-7
RC51-11
RC51-5
5
10
75
77
1
365
365
GAS VALVE
COMMON
MOTOR START
CONTACTOR
24VAC HOT
SPEED COMMAND
+35VDC
RC3-6
RC1-2
RC1-6
RC1-12
RC1-10
RC3-5
RC1-5
RC4-1
RC4-2
RC1-14
RC3-4
RC1-4
RC1-3
10
35
10
RED
1
2
PC1
MOTOR BOARD
RC1/PLG1
RC3/PLG3
RC4/PLG4
CB1
39
S1
14 PIN PLUG
PLG9
PNK
YEL
BRN
BLU
ORN
TAN
RED
BLK
PUR
M
F
H
E
D
N
B
A
G
COMMAND
P.S. COMMON
INDUCTANCE
P.S. CONTACTOR
24VAC HOT
24VAC COLD
CONNECT
TO POWER
SOURCE

184 771-A



163 699

Figure 12-2. Circuit Diagram For Gun

Notes

☞ *Hardware is common and not available unless listed.*

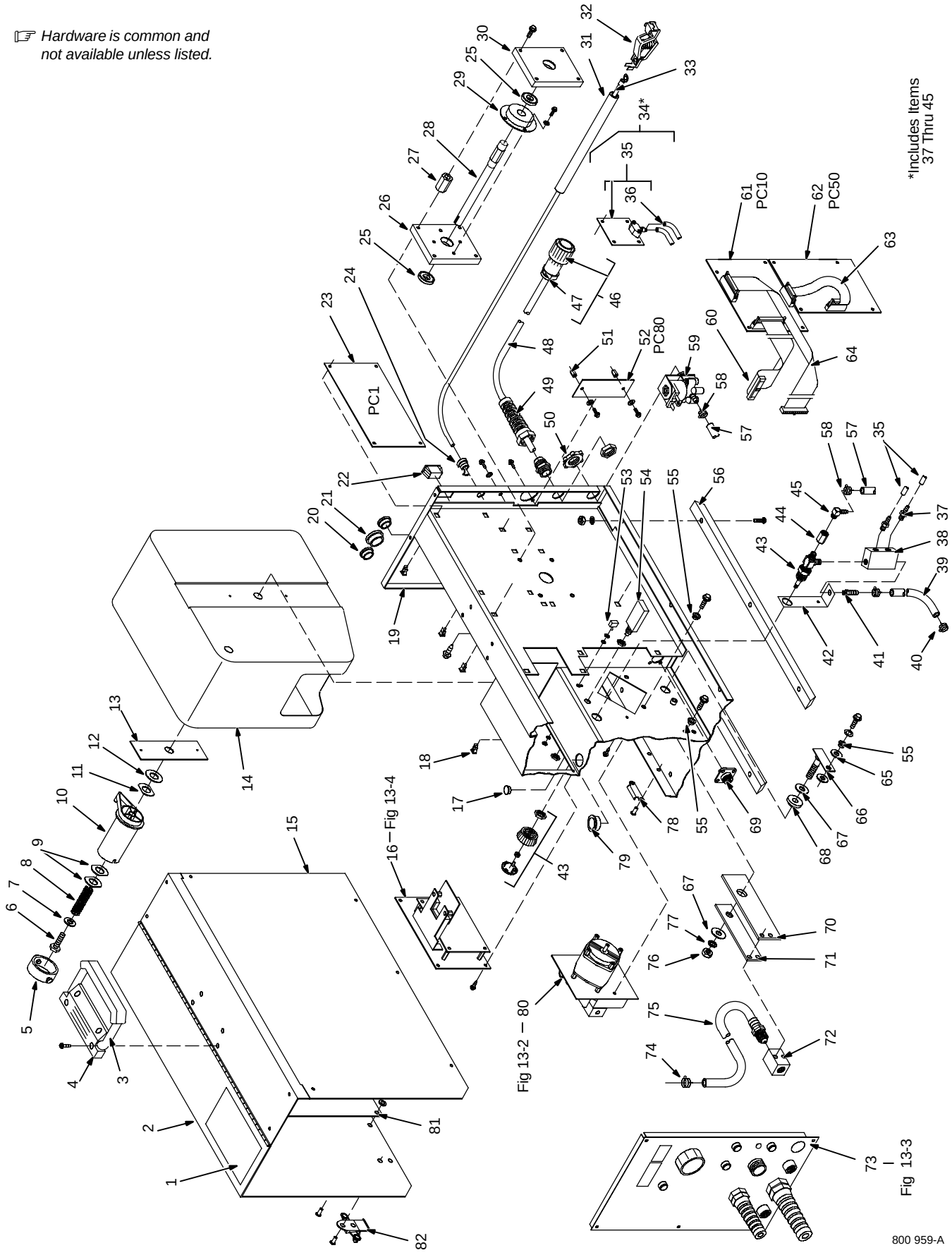


Figure 13-1. Main Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 13-1. Main Assembly

. 1		178 936	. . LABEL, warning general precautionary	1
. 2		+169 085	. . WRAPPER	1
. 3		126 416	. . HANDLE	1
. 4		126 415	. . CLAMP, saddle	1
. 5		058 427	. . RING, retaining spool	1
. 6		605 518	. . BOLT, stl hexhd .250-20 x 1.250	1
. 7		602 233	. . WASHER, flat .250 ID stl	1
. 8		057 543	. . SPRING, cprsn .845 OD x .091 wire x 1.500 lg	1
. 9		113 168	. . WASHER, locking	2
10		058 428	. . HUB, spool	1
. 11		089 561	. . WASHER, anti-turn	1
12		058 424	. . WASHER, fiber	1
13		151 697	. . STRIP, brake surface anti-turn	1
14		112 198	. . SHROUD, spool wire 12 in	1
15		169 089	. . DOOR, side RH	1
16		Fig 13-4	. . PANEL, side w/components	1
17		120 304	. . BLANK, snap-in nyl .250mtg hole	2
18		134 201	. . STAND-OFF SUPPORT, PC card .312/.375	16
19		+184 852	. . CABINET, control	1
20		057 357	. . BUSHING, snap-in nyl .937 ID x 1.125mtg hole	2
21		010 494	. . BUSHING, snap-in nyl 1.375 ID x 1.750mtg hole	1
22	S1	111 997	. . SWITCH, rocker SPST 10A 250VAC	1
23	PC1	161 486	. . CIRCUIT CARD, motor control	1
	PLG1	152 249	. . CONNECTOR & SOCKETS	1
	PLG3	115 091	. . CONNECTOR & SOCKETS	1
	PLG4	131 054	. . CONNECTOR & SOCKETS	1
24		138 044	. . BUSHING, strain relief .120/.150 ID x .500mtg hole	1
25		073 302	. . BEARING, ball rdl sgl row .669 x 1.378 x .39	2
26		113 161	. . BLOCK, bearing front	1
27		113 165	. . STAND-OFF, .250-20 x 1.000 lg stl	4
28		120 396	. . SHAFT, spool	1
29		163 304	. . BRAKE, fsbr reverse mtg pwr off 24VAC	1
30		113 900	. . BLOCK, bearing rear	1
31		176 089	. . TUBING, plstc PVC .250 ID x .375 OD x 9.000 in	1
32		601 222	. . CLAMP, univ 50A	1
33		600 399	. . WIRE, strd 14ga 600V 105c (order by ft)	35ft
34		♦166 997	. . GAS FLOWMETER, digital electronic (consisting of)	1
35	PC70	169 519	. . . . CIRCUIT CARD, flowmeter (consisting of)	1
36		169 523	. . . . . TUBING, PVC .125 ID x .062 wall (order by ft)	4ft
37		124 973	. . . . FITTING, brs barbed M 1/8tbg x 1/8NPT	2
38		136 341	. . . . FITTING, junction block	1
39		177 347	. . . . HOSE, SAE .187 ID x .410 OD x 6.500	1
40		089 120	. . . . CLAMP, hose .375-.450clp dia slfttng	2
41		073 432	. . . . FITTING, brs barbed M 3/16tbg x 1/8NPT	1
42		170 733	. . . . BRACKET, mtg gas flow meter	1
43		121 938	. . . . VALVE, shut-off screw bonnet 1/4FNPT	1
44		010 089	. . . . FITTING, pipe brs coupling 1/8NPT	1
45		112 090	. . . . FITTING, pipe brs elbow 1/8NPT x 3/16 hose	1
	PLG71	115 092	. . CONNECTOR & SOCKETS	1
		024 376	. . BLANK, snap-in nyl .625mtg hole (not shown when unit has option)	1
46	PLG9	141 162	. . CONNECTOR & PINS, (consisting of)	1
47		079 739	. . . . CONNECTOR, circ clamp str rlf sz 17-20	1
48		163 520	. . CABLE, port No. 18-14 11/c (order by ft)	12ft
49		121 276	. . BUSHING, strain relief .709 ID x 1.115mtg hole	1
50		605 227	. . NUT, .750-14 knurled nyl	1
51		144 844	. . STAND-OFF, 6-32 x .625 lg	2

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 13-1. Main Assembly (Continued)

52	PC80	182 299	CIRCUIT CARD, HF filter	1
	PLG81	115 093	CONNECTOR & SOCKETS	1
	PLG82	158 720	CONNECTOR & SOCKETS	1
	PLG83	115 092	CONNECTOR & SOCKETS	1
	PLG89	131 054	CONNECTOR & SOCKETS	1
53	S2	011 770	SWITCH, tgl SPDT 6A 125VAC	1
54	CB1	011 310	CIRCUIT BREAKER, man reset 1P 3A 250VAC	1
55		605 970	WASHER, shldr .252 ID nyl	5
56		105 567	SKID, base	2
57		176 357	HOSE, SAE .187 ID x .410 OD x 21.000	1
58		089 120	CLAMP, hose .375-.450clp dia slfttng	2
59	GS1	125 785	VALVE, 24VAC 2way custom port 1/8 orf	1
60	PLG10,24	168 675	CABLE, ribbon 34posn	1
61	PC10	163 526	CIRCUIT CARD, processor w/proms	1
	PLG11	115 092	CONNECTOR & SOCKETS	1
	PLG13	163 467	CONNECTOR & SOCKETS	1
	PLG15	153 501	CONNECTOR & SOCKETS	1
	PLG17	115 093	CONNECTOR & SOCKETS	1
	PLG18	162 382	CONNECTOR & SOCKETS	1
62	PC50	189 124	CIRCUIT CARD, interface	1
	PLG51	158 720	CONNECTOR & SOCKETS	1
	PLG52	158 719	CONNECTOR & SOCKETS	1
	PLG53	131 204	CONNECTOR & SOCKETS	1
	PLG54	148 439	CONNECTOR & SOCKETS	1
	PLG55	115 092	CONNECTOR & SOCKETS	1
63	PLG12,50	168 673	CABLE, ribbon 14posn	1
64	PLG16,41	168 674	CABLE, ribbon 24posn	1
65		117 496	WASHER, flat .312 ID fbr	2
66		117 498	TERMINAL, pwr weld	1
67		010 910	WASHER, flat .406 ID stl	2
68		075 150	WASHER, shldr .406 ID nyl	1
69	RC70	048 282	CONNECTOR w/SOCKETS	1
70		163 314	INSULATOR, terminal	1
71		163 685	BUS BAR, water	1
72		163 694	ADAPTER, terminal water/electrode	1
73		Fig 13-3	PANEL, front w/components	1
74	♦♦	089 120	CLAMP, hose .375-.450clp dia slfttng	1
75	♦♦	166 412	HOSE, water in	1
76		601 872	NUT, .375-16 stl	1
77		602 213	WASHER, lock .380 ID stl split	1
78		089 573	PLATE, keeper link-lock	2
79		010 493	BUSHING, snap-in nyl .625 ID x .875mtg hole	1
80		Fig 13-2	MOTOR & WIRE DRIVE	1
81		112 167	INSULATOR, door	1
82		089 572	CATCH, link-lock	2
	PLG101	115 092	CONNECTOR & SOCKETS	1
	PLG105	115 094	CONNECTOR & SOCKETS	1
		043 661	CORD, adapter 60M to XMT & Maxtron 450	1

+When ordering a component originally displaying a precautionary label, the label should also be ordered.

♦OPTIONAL

♦♦Part of 166 130 Optional Water Flow Shut Down Switch.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

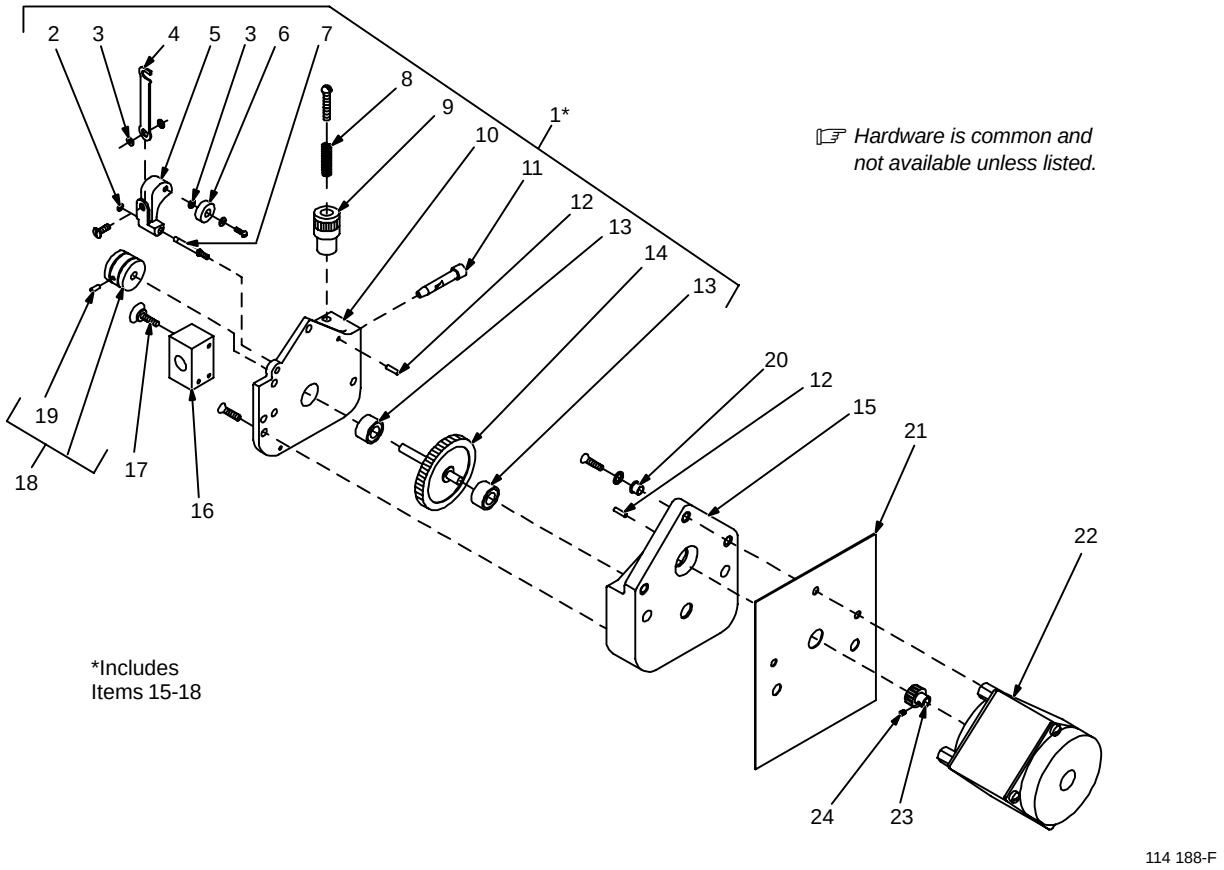


Figure 13-2. Motor & Wire Drive

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 13-2. Motor & Wire Drive (Fig 13-1 Item 80)				
1		115 191	DRIVE ASSEMBLY, wire (consisting of)	1
2		058 968	RING, retainer E	1
3		605 798	WASHER, shldr nyl .375 OD x .168 ID x .080thk	4
4		120 395	SPRING, tension pressure roll	1
5		112 713	ARM, pressure roll	1
6		058 409	BEARING	1
7		112 887	PIN, hinge	1
8		057 544	SPRING, cprsn .240 OD x .026 wire x 1.000	1
9		120 397	NUT, thumb tension adjustment	1
10		147 626	COVER, gear wire drive	1
11		058 549	GUIDE, wire inlet 1/16	1
12		602 306	PIN, spring CS .125 x .500	2
13		008 667	BEARING, ball rdl dbl row .250 x .687 x .31	2
14		113 170	GEAR & SHAFT, motor	1
15		147 624	CASE, gear wire drive	1
16		147 625	BLOCK, anchor conduit	1
17		054 263	SCREW, thumb stl .250-20 x .500	1
18		120 398	ROLL, drive V groove .030-1/16 wire (consisting of)	1
19		604 612	SCREW, set stl sch 8-32 x .125 cup point	2
20		605 971	WASHER, shldr nyl .236 OD x .195 ID x .042thk	3
21		113 162	INSULATOR, motor	1
22	M1	163 326	MOTOR, torque 24VAC	1
	PLG6	164 899	CONNECTOR & SOCKETS	1
	PLG7	168 809	CONNECTOR & PINS	1
23		113 169	GEAR, driver	1
24		604 612	SCREW, set stl sch 8-32 x .125 cup point	1

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

☞ *Hardware is common and not available unless listed.*

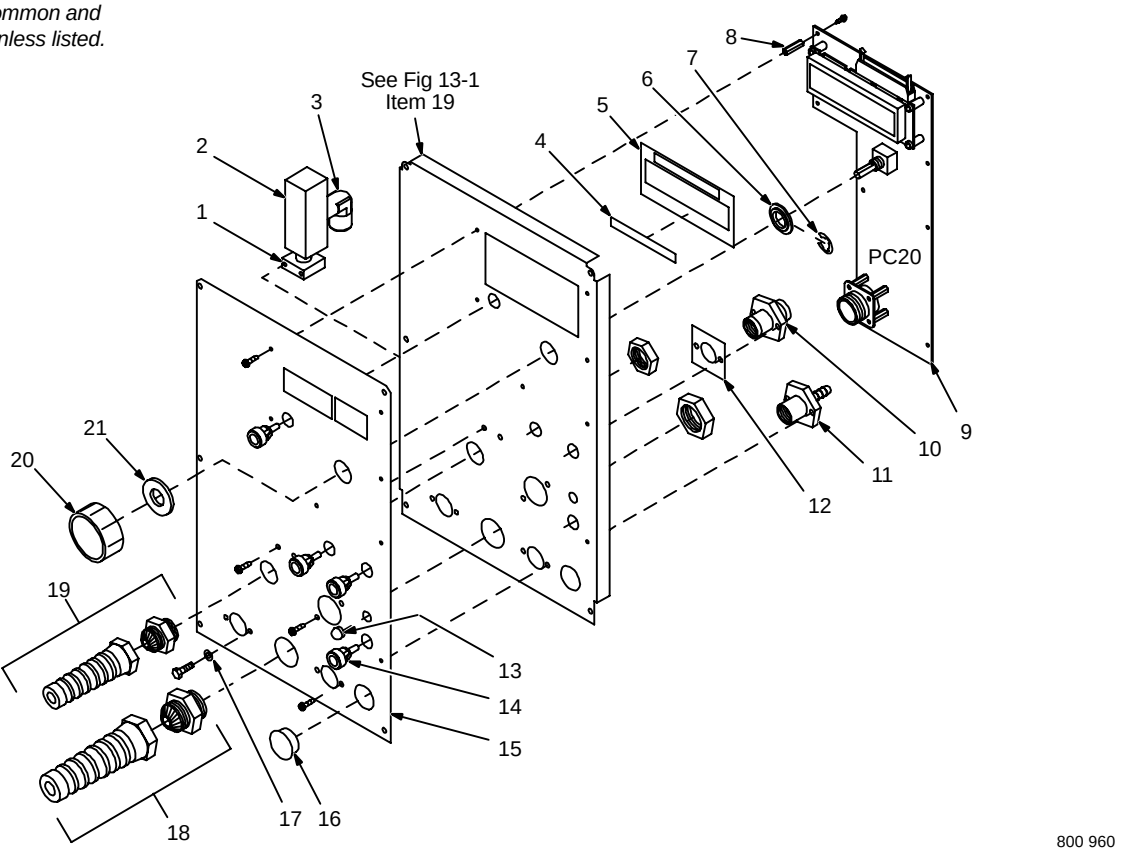


Figure 13-3. Panel, Front w/Components

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 13-3. Panel, Front w/Components (Fig 13-1 Item 73)

1		♦164 964	FITTING, mtg switch flow	1
2	FS1	♦163 603	SWITCH, flow piston SPST	1
3		♦010 295	FITTING, pipe brs elbow M 1/4NPT x .625-18 LH	1
		♦173 258	INSULATOR, water flow switch	1
		♦605 798	WASHER, shldr .168 ID nyl	1
4		147 139	TAPE, adh double sided .010 x .500 x 3.000	2
5		164 842	METER LENS, w/gasket	1
6		167 633	WASHER, shldr .612 ID nyl	1
7		159 264	RING, rtng ext .625 shaft grv x .045thk	1
8		144 844	STAND-OFF, 6-32 x .875 lg	7
9	PC20	161 440	CIRCUIT CARD, schd front	1
	PLG25	148 439	CONNECTOR & SOCKETS	1
	PLG26	131 054	CONNECTOR & SOCKETS	1
10		139 678	FITTING, water	1
11		120 854	FITTING, gas	1
12		173 259	INSULATOR, water fitting	1
13		089 032	LENS, LED 4341 red	1
14		153 169	ACTUATOR, switch	4
15			NAMEPLATE, (order by model and serial number)	1
16		000 527	BLANK, snap-in nyl .875mtg hole	1
17		605 798	WASHER, shldr .168 ID nyl	2
18		121 276	BUSHING, strain relief .709 ID x 1.115mtg hole	1
19		138 262	STRAIN RELIEF, cable flexible .428-.546 cable	1
20		173 738	KNOB, pointer	1
21		010 291	WASHER, flat .625 ID nylafil	1

♦Part of 166 130 Optional Water Flow Shut Down Switch.

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

☞ *Hardware is common and not available unless listed.*

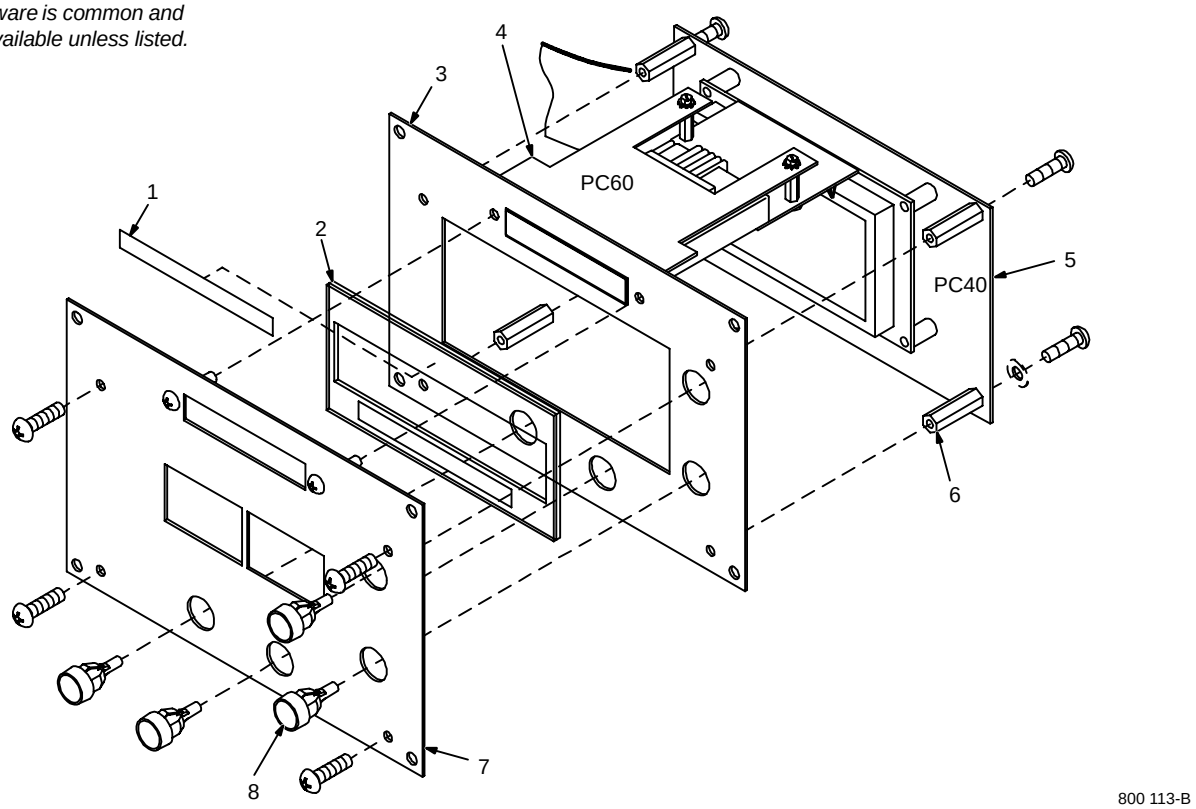


Figure 13-4. Panel, Side w/Components

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 13-4. Panel, Side w/Components (Fig 13-1 Item 16)

1		147 139	TAPE, adh acrylic double sided .010 x .500 x 3.000	2
2		155 024	LENS, clear anti-glare	1
3		154 933	PANEL, inner control	1
4	PC60	156 623	CIRCUIT CARD, data card	1
	PLG60	153 501	CONNECTOR & SOCKETS	1
5	PC40	158 160	CIRCUIT CARD, side display	1
6		144 844	STAND-OFF, 6-32 x .875 lg	4
7		154 109	PLATE, ident inner control	1
8		153 169	ACTUATOR, switch	4

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

☞ *Hardware is common and not available unless listed.*

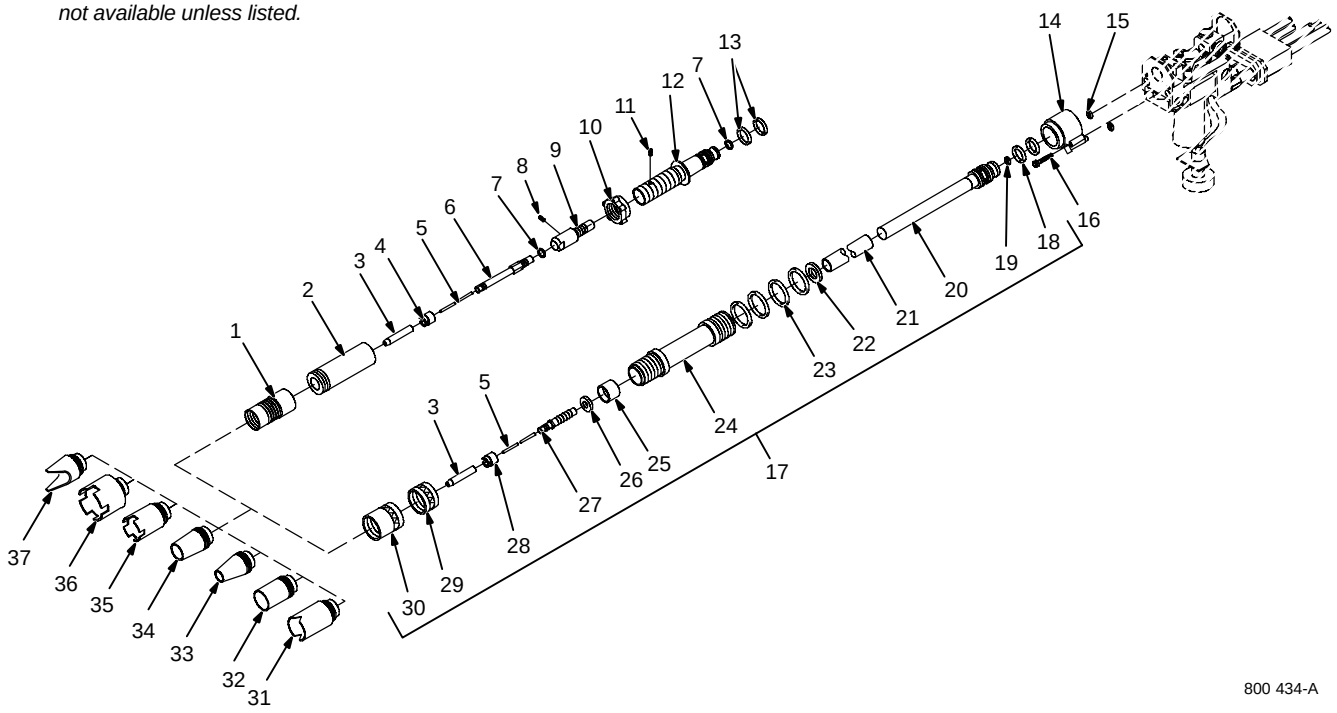


Figure 13-5. Barrel Assembly

Item No.	Dia. Mkgs.	Part No.	Description	Quantity
Figure 13-5. Barrel Assembly (Fig 13-6 Item 48)				
1		144 862	EXTENSION, nozzle (XRM-15A & 30A models)	1
2		156 821	EXTENSION, barrel 2.875 lg (XRM-15A & 30A models)	1
3		♦136 171	TIP, contact .025/31 wire	1
3		♦135 427	TIP, contact .030/36 wire	1
3		♦135 428	TIP, contact .030/41 wire	1
3		♦147 314	TIP, contact .035/41 wire	1
3		135 430	TIP, contact .035/52 wire	1
3		♦135 429	TIP, contact .047/52 wire	1
3		135 424	TIP, contact .047/61 wire	1
3		♦135 426	TIP, contact .062/73 wire	1
3		♦135 425	TIP, contact .062/81 wire	1
		136 821	WRENCH, nut tube contact	1
		166 575	WRENCH, hex .078 across the flat	1
		000 950	FITTING, hose brs coupler .625	1
4		136 748	NUT, .375-24 stl	1
5		136 683	LINER, teflon .045-1/16 wire x 6.875 lg	1
5		136 682	LINER, teflon .023-.035 wire x 6.875 lg	1
6		164 421	ADAPTER, contact tube (XRM-15A & 30A models)	1
7		164 485	O-RING .176 ID x .070CS (XRM-15A & 30A models)	2
8		604 612	SCREW, set 8-32 x .125 cup pt sch stl (XRM-15A & 30A models)	1
9		164 422	TUBE, head (XRM-15A & 30A models)	1
10		058 685	NUT, 1.000-8 nyl (XRM-15A & 30A models)	1
11		602 172	SCREW, set 10-32 x .187 cup pt sch stl (XRM-15A & 30A models)	1
12		164 423	ADAPTER, tube head (XRM-15A & 30A models)	1
13		134 800	O-RING, .614 ID x .070CS	2
14		132 985	MANIFOLD, water (XRM-15W & 30W models)	1
15		175 946	O-RING, .176 ID x .070CS (XRM-15W & 30W models)	2
16		135 128	SCREW, cap stl sch 6-32 x 1.000 (XRM-15W & 30W models)	2

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 13-5. Barrel Assembly (Fig 13-6 Item 48) (Continued)

. . 17	. . . . .	137 042	. . BARREL ASSEMBLY, water cooled (XRM-15W & 30W models) (consisting of)	1
. . 18	. . . . .	134 800	. . . . O-RING, .614 ID x .070CS	2
. . 19	. . . . .	164 485	. . . . O-RING, .176 ID x .070CS	1
. . 20	. . . . .	180 805	. . . . FITTING ASSEMBLY, barrel	1
. . 21	. . . . .	136 943	. . . . TUBING, teflon	1
. . 22	. . . . .	136 834	. . . . WASHER, flat .594 ID fbr	1
. . 23	. . . . .	180 966	. . . . O-RING, .926 ID x .070CS	4
. . 24	. . . . .	137 041	. . . . BARREL, outer	1
. . 25	. . . . .	136 836	. . . . INSULATOR, head tube from adapter	1
. . 26	. . . . .	136 835	. . . . WASHER, flat .390 ID brs	1
. . 27	. . . . .	136 680	. . . . ADAPTER, contact tube	1
. . 28	. . . . .	136 748	. . . . NUT, .375-24 stl	1
. . 29	. . . . .	136 833	. . . . NUT, 1.000-12 stl	1
. . 30	. . . . .	136 832	. . . . ADAPTER, nozzle	1
. . 31	. . . . .	♦009 925	. . NOZZLE, spot outside corner .937 ID x 2.375	1
. . 32	. . . . .	♦050 116	. . NOZZLE,13/16 orf x 1-5/8 lg	1
. . 33	. . . . .	♦050 115	. . NOZZLE, 1/2 orf x 1-5/8 lg	1
. . 34	. . . . .	050 622	. . NOZZLE, 5/8 orf x 1-5/8 lg	1
. . 35	. . . . .	♦000 442	. . NOZZLE, spot	1
. . 36	. . . . .	♦004 466	. . NOZZLE, spot	1
. . 37	. . . . .	♦000 443	. . NOZZLE, spot inside corner	1

♦OPTIONAL

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

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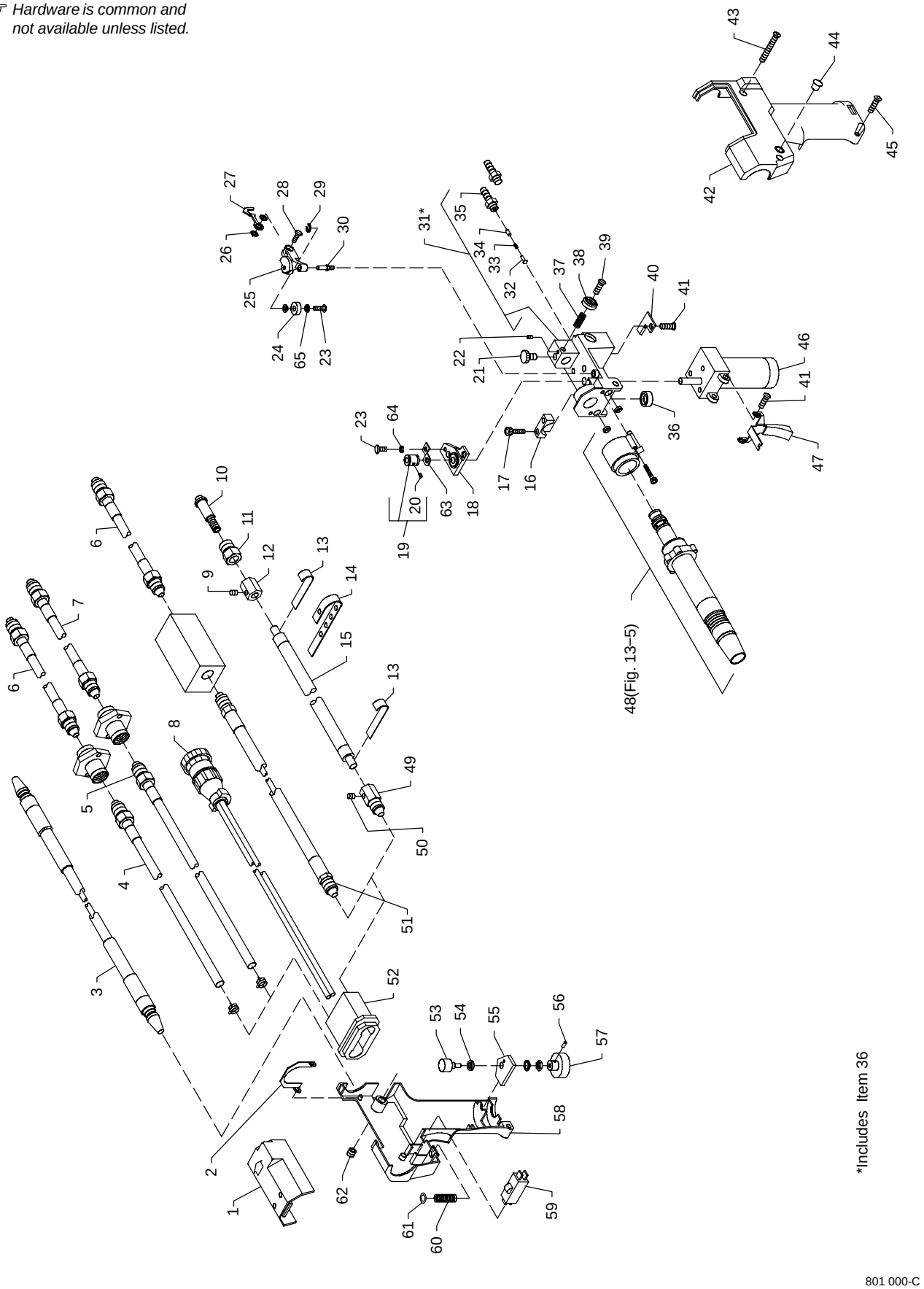

Figure 13-6. XRM-A & W Guns

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 13-6. XRM-A & W Guns

1		133 479	COVER	1
2		135 196	SPRING, closure cover	1
3		112 715	CONDUIT w/FITTING, 15ft (XRM-15A & W models)	1
3		112 716	CONDUIT w/FITTING, 30ft (XRM-30A & W models)	1
4		137 474	HOSE, water in (XRM-15W model)	1
4		137 475	HOSE, water in (XRM-30W model)	1
5		137 473	HOSE, gas in (XRM-15A & W models)	1
5		137 472	HOSE, gas in (XRM-30A & W models)	1
6		000 571	HOSE, water (XRM-15 & 30W models)	2
7		048 837	HOSE, gas	1
8		163 695	CABLE, control (XRM-15A & W models)	1
8		163 680	CABLE, control (XRM-30A & W models)	1
9		141 694	SCREW, set .312-18 x .375 conept sch stl	1
10		173 225	FITTING, end water	1
11		146 552	NUT, swivel .500-20 LH	1
12		173 223	CONNECTOR, weld cable	1
13		152 577	STRIP, cop .010 x 2.000 x .750	2
14		073 476	CLAMP, strap rbr 5 holes .375 wide x 4.625 lg (XRM-15A & W models)	6
14		073 476	CLAMP, strap rbr 5 holes .375 wide x 4.625 lg (XRM-30A & W models)	13
15		173 278	CABLE, power (XRM-15A model)	1
15		173 279	CABLE, power (XRM-30A model)	1
16		133 365	CLAMP, head tube	1
17		000 417	SCREW, 10-24 x 1.000 sochd hex	2
18		162 041	BEARING BLOCK ASSEMBLY	1
		604 638	SCREW, 6-32 x .375 sochd hex	3
		143 480	SCREW, 6-32 x .625 sochd hex stl	1
19		136 135	ROLL, drive VK groove .023-1/16 wire (consisting of)	1
20		604 612	SCREW, 8-32 x .125 cup pt sch stl	2
21		155 565	SCREW, thumb	1
		134 799	O-RING, .176 ID x .070 CS (used w/thumbscrew)	1
22		135 126	SCREW, set 6-32 x .125 cup pt sch stl	1
23		114 045	SCREW, hexwhd slt stl slffmg 6-32 x .500	4
24		134 623	BEARING, idler roll	1
25		132 852	ARM, pressure	1
26		605 798	WASHER, shldr nyl .375 OD x .168 ID x .080	2
27		133 083	SPRING, tension adj drive roll	1
28		144 860	SCREW, 8-32 x .437 flathd slt stl	1
29		058 968	RING, retainer E	1
30		135 474	PIN, hinge	1
31		163 704	HOUSING, wire drive (XRM-15A & 30A models) (consisting of)	1
31		163 692	HOUSING, wire drive (XRM-15W & 30W models) (consisting of)	1
32		170 353	PLUNGER, pin	1
33		170 351	SPRING, cprsn .150 OD x .010 wire x .375 lg	1
34		170 352	PLUNGER, gas flow	1
35		135 580	FITTING, gas	1
36		058 262	CAP, valve	1
		146 555	SCREW, set 8-32 x .125 cup pt sch	2
		151 661	SCREW, set 10-32 x .125 cup pt sch (XRM-15W & 30W models)	2
37		112 896	SPRING, cprsn .240 OD x .020 wire x .437	1
38		135 773	NUT, thumb tension adjusting 8-32	1
39		143 360	SCREW, 8-32 x .500 panhd phl stl	1
40		136 679	CLAMP, strain relief	1
41		114 045	SCREW, 6-32 x .500 hexwhd slt stl slffmg	2
42		164 591	CASE, gun LH	1
43		135 646	SCREW, 8-32 x 1.500 rndhd phl stl	2
44		143 397	BLANK, snap-in nyl .312mtg hole	1
45		135 645	SCREW, 8-32 x 1.000 hexwhd slt stl	1
46	B2	170 354	MOTOR, gear w/tach feedback	1
47		164 592	TRIGGER	1

Item No.	Dia. Mkgs.	Part No.	Description	Quantity

Figure 13-6. XRM-A & W Guns (Continued)

. . 48		Fig 13-5	. . BARREL ASSEMBLY	1
. . 49		137 495	. . FITTING, connection power weld (XRM-15A & 30A models)	1
. . 50		141 694	. . SCREW, set stl sch .312-18 x .375 cone point (XRM-15A & 30A models)	1
. . 51		137 476	. . CABLE, power/water out 15ft (XRM-15W model)	1
. . 51		137 477	. . CABLE, power/water out 30ft (XRM-30W model)	1
. . 52		133 362	. . STRAIN RELIEF, cable	1
. . 53	R4	163 683	. . SWITCH, rotary 3posn 1P	1
. . 54		161 776	. . WASHER, non-turn	1
. . 55		175 731	. . WASHER, anti-turn	1
. . 56		602 169	. . SCREW, set 8-32 x .187 cup pt sch stl	1
. . 57		163 679	. . KNOB, control inc & dec .140 shaft x 1.125 OD	1
. . 58		164 590	. . CASE, gun RH	1
. . 59	PB1	000 369	. . SWITCH, lim 10A 125/250VAC DPST plgr	1
. . 60		183 884	. . SPRING, cprsn .240 OD x .026 wire x 1.000	1
. . 61		184 101	. . WASHER, shldr	1
. . 62		135 647	. . NUT, 8-32 brs	3
. . 63		162 042	. . CONTACT, current pick-up	1
. . 64		602 198	. . WASHER, lock stl split No. 6	1
. . 65		134 624	. . BEARING, flg nyl .140 ID x .187 OD x .375flg x .031thk	2

To maintain the factory original performance of your equipment, use only Manufacturer's Suggested Replacement Parts. Model and serial number required when ordering parts from your local distributor.

Warranty Questions?

Call
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TRUE BLUE® WARRANTY

Effective January 1, 1999
(Equipment with a serial number preface of "KK" or newer)

This limited warranty supersedes all previous Miller warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY − Subject to the terms and conditions below, Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS.

Within the warranty periods listed below, Miller will repair or replace any warranted parts or components that fail due to such defects in material or workmanship. Miller must be notified in writing within thirty (30) days of such defect or failure, at which time Miller will provide instructions on the warranty claim procedures to be followed.

Miller shall honor warranty claims on warranted equipment listed below in the event of such a failure within the warranty time periods. All warranty time periods start on the date that the equipment was delivered to the original retail purchaser, or one year after the equipment is sent to a North American distributor or eighteen months after the equipment is sent to an International distributor.

1. 5 Years Parts − 3 Years Labor
   * Original main power rectifiers
   * Inverters (input and output rectifiers only)
2. 3 Years — Parts and Labor
   * Transformer/Rectifier Power Sources
   * Plasma Arc Cutting Power Sources
   * Semi-Automatic and Automatic Wire Feeders
   * Inverter Power Supplies
   * Intellitig
   * Engine Driven Welding Generators
     (NOTE: Engines are warranted separately by the engine manufacturer.)
3. 1 Year — Parts and Labor
   * Motor Driven Guns (w/exception of Spoolmate 185)
   * Process Controllers
   * Positioners and Controllers
   * Automatic Motion Devices
   * Robots
   * IHPS Power Sources
   * Water Coolant Systems
   * HF Units
   * Grids
   * Spot Welders
   * Load Banks
   * SDX Transformers
   * Miller Cyclomatic Equipment
   * Running Gear/Trailers
   * Plasma Cutting Torches (except APT, ZIPCUT & PLAZCUT Models)
   * Deutz Engines (outside North America)
   * Field Options
     (NOTE: Field options are covered under True Blue® for the remaining warranty period of the product they are installed in, or for a minimum of one year — whichever is greater.)
4. 6 Months — Batteries
5. 90 Days — Parts
   * MIG Guns/TIG Torches
   * APT, ZIPCUT & PLAZCUT Model Plasma Cutting Torches
   * Remote Controls
   * Accessory Kits
   * Replacement Parts (No labor)
   * Spoolmate 185

Miller's True Blue® Limited Warranty shall not apply to:

1. Items furnished by Miller, but manufactured by others, such as engines or trade accessories. These items are covered by the manufacturer's warranty, if any.
2. Consumable components; such as contact tips, cutting nozzles, contactors, brushes, slip rings, relays or parts that fail due to normal wear.
3. Equipment that has been modified by any party other than Miller, or equipment that has been improperly installed, improperly operated or misused based upon industry standards, or equipment which has not had reasonable and necessary maintenance, or equipment which has been used for operation outside of the specifications for the equipment.

MILLER PRODUCTS ARE INTENDED FOR PURCHASE AND USE BY COMMERCIAL/INDUSTRIAL USERS AND PERSONS TRAINED AND EXPERIENCED IN THE USE AND MAINTENANCE OF WELDING EQUIPMENT.

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Please complete and retain with your personal records.

Model Name Serial/Style Number

Purchase Date (Date which equipment was delivered to original customer.)

Distributor

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Contact your Distributor for:

To locate distributor nearest you call 1-800-4-A-Miller.

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Contact the Delivering Carrier for:

For assistance in filing or settling claims, contact your distributor and/or equipment manufacturer's Transportation Department.

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